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ORIGINAL ARTICLES

ORTHODONTIA AS A PROFESSION

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THE foundation of the specialty of orthodontia came about during the years of 1900 to 1905; first, by the establishment of a school to teach it and, second, by the publication of a series of papers dealing with the principles and technic of practice. The "Items of Interest" and its editor, Dr. R. Ottolengui, deserve great credit for devoting full space to publication of material showing the advanced work of this new specialty. One great problem of the pioneers was to convince the dental profession that the public would be better served in this work when it was practiced as a distinct specialty, and thus to gain their support. The pioneers were thus looking into an unknown future, but it reflects great credit upon the dental profession that the improved results were quickly recognized and the specialty speedily became firmly established. Pioneer work is always attractive to courageous men, and soon many men of experience were drawn into the field. Since that time, it has rapidly grown until its practitioners number over four hundred in the United States, and every city of importance has one or more specialists in this branch. The glamor of this specialty as pioneer work has mostly passed away, and one may now more clearly estimate the advantages and disadvantages of following orthodontia as a specialty.

The difference of this practice from general dentistry in manner of management and in equipment and materials was early recognized, and it was soon seen that to obtain best results, it must be completely divorced from general dentistry.

The practice of orthodontia is contrasted strongly with all other branches of medicine and of dentistry in the fact that in these other practices the

operations are finished in a short time. While the patients in other practices may, and generally do, return from time to time over a long period of years, yet the particular operations are finished in a short time, and the practitioner, or the patient, is released to change to another practitioner if he wishes, or the practitioner closes his relationship with the patient in a short time, or may close up his practice within the space of a few weeks or a month.

Upon the other hand, an orthodontist takes his patients for a period of from one to three or five years and when the work is finished, the patient never returns and the relations are closed. As an established orthodontist carries from forty to one hundred patients at a time at various stages of treatment, he consequently finds great difficulty in closing up his practice within several years' time, or in leaving his practice for more than a week or so for a vacation or for other duties (unless he keeps a capable assistant to attend to the practice during his absence); he is thus on a treadmill which never stops. No other practice is similar in this respect and consequently no other practice demands so long and intensive application and patience. In this respect, the practice of orthodontia would not be attractive to many men, and this feature should be carefully considered by those preparing to undertake it as a life work.

In what respects is it more desirable? To the pioneers in the years past, it undoubtedly gave greater returns financially for the risks involved than did the general practice of dentistry, but this condition is not likely to continue long, even if it is present now, because the specialty is being, and has been, rapidly filled, and the opportunities are not so great except to the exceptionally gifted and well-prepared men. The returns from a professional life, however, must never be regarded in the financial aspect. The real returns from a professional life are in the opportunities to be useful and to come actively into intimate and sympathetic touch with humanity in a helpful way. In the opportunity to render helpful service that will promote friendship, it also furnishes the opportunity and encouragement to build up an honorable and spiritual character. In these respects, a professional career generally offers more opportunity than a business career, though it is not rewarded so well financially. Many business occupations are not helpful to the public and do not cultivate sympathetic relations with a large number of people.

The long and cherished friendships engendered by honest professional service are most highly valued by our best professional men. As life goes on, these friendships are of more value than mere financial returns. Most dentists serve many patients over a long period of time, and if the service is honest and appreciated, long, interesting and helpful friendships are the result.

Unfortunately, this important element of professional life is not so distinct in orthodontia. The patients are young, the service is only of a short duration, and, as the conditions of life change rapidly from youth to manhood or womanhood, and as the constant contact is discontinued, the friendship is broken, though the appreciation for the service continues. But the

paths soon divide and the long and pleasant friendships that occur in general practice are not possible. This fact should be seriously considered by the young man in choosing the specialty of orthodontia as a profession. This loss has as its compensation, however, the fact that orthodontia as a science and a profession is broader in that one must deal with the denture and the individual as a whole, with the influences of heredity, of habits, and the whole physical surroundings of the child. It brings one into more contact with surrounding, collateral sciences and specialties and into more intimate contact with fellow-practitioners, with whose patients he deals. It promotes and compels a sympathetic and considerate relationship between practitioners of dentistry and promotes a higher professional character than the general practice of dentistry. Finally, the results are more important to the patient than other fields of dentistry. They not only secure an efficiency of the denture, which is a lifelong benefit, but there is a mingling of the artistic and the beautiful in the results on the faces of the patients, and this is a source of the highest aspiration and incentive.

WHY ALL THIS ABOUT ORTHODONTIA AND THE GENERAL PRACTITIONER?—AND WHY NOT?

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A FEW weeks ago at the Missouri Dental Association Meeting, Dr. Wm. J. Brady, a specialist of great experience, spoke upon the subject of orthodontia and the general practitioner. Two of his remarks made a deep impression upon me: one, that statements concerning orthodontic progress should be taken with a grain of salt; the other, that the dentist should, and by all means must, do more orthodontic work.

A number of orthodontic specialists were in the audience, but these statements remained unchallenged and undiscussed. Ten years ago, such ideas would have been questioned as being idealistically impractical, as being wonderful, if true. But today they ask, Why not? Provided the general practitioner realizes that he has learned very little about orthodontics in school and makes a sane attempt to perfect himself in all the skill and technic that is available in the science, provided that he does not believe that an appliance is the immediate and entire answer to orthodontic problems, he should incorporate orthodontics into his general practice.

The beginner is too prone to believe that orthodontia is a simple thing. It is not simple; it is exceedingly complex. Nothing requires more experience, training and diligence to be handled with celerity and dispatch than the treatment of malocclusion. Orthodontia in the hands of the unskilled is a messy, rather hit or miss affair, and most of us can remember how much of a failure our first five, or even ten, years of practice were.

The gravest danger in the general practitioner's taking up orthodontia is a highly possible over-reliance upon orthodontic appliances.

Too much has been said and written about appliances. A good orthodontist is one who can correct cases of malocclusion and make them stay that way, regardless of whether he uses a ribbon saw appliance, or one of the "one-man-top" devices.

Here is a sample of the misinformation being distributed through dental laboratory trade journals.

"We have observed that the tendency among most dentists who decide to include orthodontia as a branch of general dentistry is to start off with the mistaken idea that one type of appliance—the Jackson—is adaptable to all conditions. The fact that this appliance is advertised more extensively than any other, and at low prices, probably accounts for such selection. It is true that a simple Jackson appliance can be made for a low price, but it does not follow that it can be used in every case. On the contrary, there are many

conditions where the use of such an appliance is contraindicated. For example, it cannot be used in cases where intermaxillary force is necessary; it cannot be used to good advantage in the mouth of a young patient whose teeth are not fully erupted, for the reason that the short teeth do not furnish good retention for the collars and cribs; it is not indicated in a case where the arches are in normal relation and only one or two teeth are to be brought into alignment, as such a condition can be corrected by a more simple appliance. To attempt to use Jackson appliances where they are not indicated is to court disappointment."

In other words, they have another kind to sell. This, then, means that a great many men in the dental profession are having their cases treated and diagnosed by laboratories.

Some of these laboratories are broadcasting literature in various parts of the country. While we cannot be certain concerning the authorship of these articles, written obviously with the sole aim of "gettin' 'em to read it and buy," we assume, judging by the nature of their science, that they were written by some layman the morning after attending a highly technical dental lecture.

But, however, these authors are "gettin' 'em to read and buy," and after all whose fault is it?

Wherever there is a demand in the affairs of men, professional as well as nonprofessional, there is some one ready to meet it. There is an obvious demand for these laboratory appliances and perhaps their use seems the only way out in selected instances to some dentists, and cases must be treated somewhere, somehow, some way.

Orthodontia must be well understood and deeply studied to be a practical and reasonable procedure in practice. It is still in the cult stage of development, small groups following respective leaders, believing innocently, childishly, almost implicitly, in this or that, sometimes assured that a member of another cult should be hung in effigy (perhaps he should be) or that those who refuse to use some particular mechanical what-not should be ostracized from the world of science.

But after all, all sciences and callings have been through the same stage at some period of their development; it is a healthy sign rather than a disease. It shows interest and enthusiasm akin to religious fanatacism. The First International Orthodontic Congress should be the mark of a new epoch in orthodontic history, one in which all workers are in harmony and of one accord, even though there will remain the holy and the unholy, the so-called wicked and righteous, as of yore. It is ardently hoped, however, that the skies will break a little clearer on the new day, and that the treatment of malocclusion will be done by the skilled practitioner, regardless of whether he be in general practice or in the *n*th degree of specialization; whether his training was secured through the long and tedious route of experience or whether it has been secured in some school of orthodontic specialization. Whether he still uses brass orthodontic appliances or platinum, no doubt, will

depend upon whether he is delivering Ford or Packard service, whether he buys his jewelry at a cheap shop or at Tiffany's.

In other words, half-trained orthodontic service is a failure. Well-trained service is a success, and it would seem if there is an excuse for the existence of the International Journal of Orthodontia, Oral Surgery, and Radiography and if it is to endure, it must supply this great static demand for orthodontic information and training.

A man has come forward, a great organizer, a natural leader by instinct and experience. He senses confusion, chaos, and professional jealousy among the workers in a science which has the inherent possibility of becoming great. He understands the psychology of scientific men. He knows that they are rarely organizers and leaders, that they are unable to keep harmony in the ranks, that they do not understand each other.

Bill Fisher, in organizing, putting over, and placing in operation the First International Orthodontic Congress in the world, has at least made the greatest and most heroic single effort ever made before to pick up the scattering threads of the nucleus of a great science. He has secured wonderful cooperation from all sources, save a few, and he could not and did not hope for 100 per cent success when he started.

ALL HAIL THE FIRST INTERNATIONAL ORTHODONTIC CONGRESS!

THE VALUE OF GENERAL CLINICAL SURVEYS IN ORTHODONTIC DIAGNOSIS

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ORTHODONTIC research, until this time, has confined itself to the application of local etiologic factors. Every type of malocclusion is accounted for as the result of some perverted traction. Our etiologic vocabulary is threadbare by the constant usage of such terms as thumb-sucking, pillow-habits, adenoids, tonsils, lip habits, artificial feeding in babyhood, soft food with deficient mastication and many other pseudo explanations, as the cause of arch and jaw deformities.

That views of such limited vision should have held their prominence in orthodontic conception is very likely due to our training. It is but another expression of the error of dentistry, which travels in a path divorced from the broader teachings of medicine.

Members of the medical profession, individually or in groups, are delighted to have our help and in return are delighted to help us if we but indicate a desire. A child has a body as well as a mouth, and the growth and development of both must necessarily arise from the same general influence. This influence, of course, may be ascribed to all of the metabolic activities of the entire physical system.

When we stop to consider that children, figuratively speaking, are like leaves of a tree or flakes of snow, all alike yet different, the process of their body growth at once demands our scientific attention. Certainly we all agree that the growth processes which influence and control the formative progress of the carpal bones are the same which govern the bones of the feet, and when that influence errs, according to medical statistics, we always find an anomaly in both extremities. Therefore, the suggestion is offered that the bony influence upon jaw growth cannot be separated from other parts of the skeleton.

Assuming that we have a child seven, eight or twelve years of age, with one or more "crooked teeth" accompanied by the usual narrow arches (with the attending anxiety of a proud mother and willing father) is it fair that we treat that case mechanically without first making a survey of the growth of the whole skeleton? Children are entitled to the broadest study that an orthodontist can give, for the reason that a lack of lateral arch growth will often right itself when nature is given her just trial.

The body survey should be done by a trained and experienced pediatrician; his report should constitute an opinion far more valuable than the

*Operated for the exclusive study of endocrine cases.

meager, stereotyped orthodontic history; his morphologic findings, x-rays, weight, height, etc., collaborated with the orthodontic survey, should be accepted as a scientific guide in determining the proper time for treatment. This treatment may be entirely medical, both medical and orthodontic, or simply mechanical.

We have not less than one hundred children with narrow arches (Class I) who report to the office at intervals of six months for observation. At each visit the condition is compared to the record made on their first visit, and it is most gratifying to state that no small percentage of these children have shown a decided progress in arch growth, and of even greater interest is the fact that those children who have made little or no progress in body growth have been correspondingly slow in arch growth.

It has been stated that children never grow continuously but intermittently. Students will concur in this opinion.

It is within the memory of many of us that the dental profession advised postponement of orthodontic treatment until the age of twelve. This advice was, of course, arbitrarily given, and was applied to all cases of arch and jaw maldevelopment. The error of so interpreting our Class II and Class III cases was obviously a fault. We might well remember with gratitude, however, the advice of orthodontic pioneers who thought jaw development should be given its full opportunity, although, of course, we realize the necessity of treating many Class I cases early. Diagnostic acumen, as well as correction measures, is and has been taught, but the broad vision of clinical application and research has unfortunately been relegated to the convention halls rather than to the daily practice at the chair.

It is universal knowledge that the crowns of the permanent incisors are designed and formed, never to be altered, during the first year of postnatal life. Though wonderful in its conception, nature makes her dimensions, particularly as to the width of these teeth, to "fit in" an arch not at *seven, nine or twelve years of age, but at maturity.* The significance of determining the *proper* time for treating deficient arch development deserves our consideration. My own conception is as follows: If the enamel has no capacity for growth-change, then the only possible way for the teeth to assume a normal placement in the arch is for the bone structure, in which they form, to have its full lateral growth. With this hypothesis understood, it is easy to reason that if the skeleton framework is retarded in development certainly we should not expect arch width to be of such breadth as to accommodate an already predetermined and unchangeable incisor. Treatment and the prognosis following mechanical interference naturally follow this systematic survey and will take care of themselves if we but reason soundly in the beginning.

Bone, that is, the "bed" in which the teeth lie, is a living material. It is susceptible to an increased growth at any period during the normal age of skeletal development.

The prognosis of any case of malocclusion resulting from deficient arch or jaw growth is a problem. This opinion is not difficult if the correct vision of a possible correlation is accepted. Should an individual be dwarfed

in body development, and many are, then the "fixed" enamel tissue could never occupy a normal alignment. The interpretation of the "individual normal" should be construed as being a deviation from an ideal occlusion accompanying a perverted or stunted skeletal growth. This group represents individuals who failed to reach a typal form as intended by nature when the type of tooth was determined.

For the past three years it has been the author's privilege to be associated with a group of medical men and take an active part in the clinical survey of nearly a thousand children. This authoritative support prompts him to predict that orthodontia will reach a plane of its greatest value when we accept the indisputable fact that the greatest percentage of jaw malformations, with resulting malposed teeth, is very definitely correlated with skeletal growth.

ORTHODONTICS. ITS RELATION TO ORAL SURGERY

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THE great progress that has been made in orthodontics is in a large measure due to the scientific studies conducted at the meetings of the American Society of Orthodontists. This great American organization has done more to stimulate real scientific investigation in the advancement of orthodontics than any school or individual. Its broad democratic spirit has permitted scientists to demonstrate their investigations and results.

Since this great orthodontic forum has nothing to sell or buy, the reign both of guesswork, theorizing and of groping empirics as exclusive methods has come to an end. Her great masters have stimulated the members to study the essentials of diagnosing and prognosing in order to formulate a plan of treatment that is to the best interest of the patient, rather than to the interest of a ready-made appliance. Her members have been especially weaned from the sway of any authority whatever, recognizing that even the soundest seeming conclusions of the present are but working hypotheses which may have to be abandoned at any time upon the gathering of fresh evidence—this is *the true scientific spirit.*

The progress of orthodontics has done much in a scientific way to stimulate the advancement of oral surgery. This great specialty is dependent not only upon a mastery of surgical pathology and surgical principles, but also upon a clear understanding of the scientific application of orthodontic principles and prosthetic restoration. Especially is orthodontics a great aid to the oral surgeon.

The marvelous progress in constructing appliances to regulate irregularities of the teeth has taught the oral surgeon that many cases that heretofore were dependent upon surgical removal of misplaced and impacted teeth can be treated successfully by orthodontic methods, thus establishing a better occlusion and harmony of the facial lines.

In the past, and unfortunately to a great degree in the present, too many impacted anterior teeth are removed because the operator who attempts to practice oral surgery has not been trained in orthodontic principles.

I recall the case of a girl, sixteen years of age, who had two cuspids that were removed because there was not sufficient space between the lateral and the first bicuspid to permit these teeth to erupt in their normal positions. Her family dentist referred this patient to an oral surgeon who was not familiar with the practice of the orthodontist, and he removed these teeth. This young lady now has an inharmonious relation of the arches and distorted facial lines. The spectacular and pseudopractice of hurriedly and inadvisedly

removing teeth not fully erupted or partially impacted may, in a measure, be considered malpractice. To attempt to practice oral surgery the operator should be trained to recognize that the orthodontist is an important factor in the diagnosing of malrelations of the teeth and arches.

Many cases of jaw fractures which in the past were crudely and unscientifically treated are now successfully immobilized with orthodontic bands and appliances; such treatment offers a far more favorable prognosis. A surgeon, whether he practices this special field of oral surgery or general surgery, should realize that the open reduction of a fracture of the jaw may cause a serious complication resulting frequently in a chronic suppurative osteitis terminating in an extensive necrosis and a crippled jaw.

The oral surgeon who treats fractures of the jaw should see to it that he is competent and equipped to construct well-fitting bands and appliances in order to immobilize jaw fractures. If he is not able to do this it is his duty to consult with the orthodontist to assist him to carry out this work so that healing of the fracture may take place without serious complications and will result in a favorable prognosis.

Several months ago I was called to another city to treat a fracture of the maxilla of a young woman who was injured in an automobile accident. Upon arriving at the hospital I found that the surgeons, during the previous forty-eight hours, had made several attempts to immobilize the fractured maxilla but were unable to hold it in its correct position. The fracture extended horizontally between the right cuspid and lateral and through the floor of the antrum. The maxilla supporting all the teeth from the cuspid back was pushed inward approximately one inch. A number of attempts had been made to hold the maxilla in its correct anatomic position, but it would drop downward and inward. The surgeons had suggested that it probably would be necessary to make an open reduction and wire the bone. Fortunately the family dentist was called upon, and he advised that they consult an oral surgeon to treat this case.

Having practiced orthodontics for many years, I treated this case by fitting an anchor band with buccal tubing on the right and left first molars; I then slipped an alignment arch wire into place and wired all the remaining teeth to this base wire. This simple appliance held the arch in its correct position. Then the upper and lower teeth on the left side were ligated together so that the lower teeth also gave support to the upper right fractured part and assisted in holding it in its correct anatomic position. Fortunately this case was not a compound fracture and healing took place without any complications. After three weeks the appliances were removed. The prognosis was excellent.

Conservation of tissue and restoration of function has placed orthodontics as one of the foremost specialties of the healing art. Oral surgeons should at all times endeavor to follow these principles. To remove tissue successfully and obtain healing may be considered good surgery, but to operate and restore tissue to function correctly is fulfilling the highest ideals of surgical art. Orthodontists too should be familiar with the principles of

surgical practice. The oral surgeon can be of great assistance to the orthodontist in aiding him to correct many cases of complex malposition of the teeth and malrelation of the arches with complications.

The close relation and cooperation between the oral surgeon and orthodontist will develop an understanding of the principles and practice so necessary to formulate orthodontic and surgical judgment.

Oral surgeons will be interested to observe the work of the great masters in orthodontics who will meet for the first time at the International Congress of Orthodontics held at New York City. Let us hope that this great meeting will be a forward step in the onward progress of scientific achievements.

THE TIME FACTOR IN ORTHODONTIC TREATMENT*

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LIKE any other branch of the healing art, orthodontia has its share of faddists. When any of these in positions of prominence give vent to opinions, either verbally or by publication, which are at variance with established principles of practice, many of the rank and file of practitioners are confused. This naturally leads to discussions, for the bare statement of an opinion is no longer accepted as logic *by those having the power of independent thought* without first analyzing the statement and endeavoring to learn the motives which appear to have prompted it.

One of the most important discussions to those interested in orthodontia is concerned with the length of time which should be required for the treatment of the commonly occurring types of malocclusion, namely, those cases of favorable age and average degree of complication which constitute the bulk of any orthodontic practice. From some quarters we hear the claim that a period of a few weeks or a few months should suffice for such cases, and from this same source there emanates the most violent criticism of those who do not follow this plan, who refuse to accept it as logical and to the best interests of orthodontic patients. Also, from this same source are spread stories of cases whose treatment is reported as having consumed two, three, or five years, with the claim that such long periods are unnecessary and detrimental.

Any satisfactory solution of this problem must have for its foundation a correct conception of what is entailed in orthodontic treatment and what must be accomplished by it. In attempting to establish such a foundation for further discussion, I find it necessary to upset in some degree the idea most prevalent among dentists as to the scope of this process. A grievous misconception of it has been created for the most part by the wide publicity given certain types of appliances by their inventors and manufacturers. *In their efforts to create a sales demand,* many ridiculous and misleading claims have been made and are still being made in advertisements appearing in some of our journals. The basic thought which these advertisements, as well as other sources of propaganda, carry to the minds of those eager for orthodontic information is *that the mechanical movement of the teeth into correct occlusion, and their fixation in this relationship by means of a mechanical retainer constitutes orthodontic treatment.* To the unschooled mind or to those actuated by commercial motives, such ideas are doubtless received with comfort, and the formula is followed with confidence and zeal, with the result that all too frequently black pages are added to the orthodontic record.

*Read before the thirteenth annual meeting of the Alumni Association of the College of Dentistry, University of Southern California.

The question of what really constitutes orthodontic treatment is the important one for us to determine, for upon the answer will depend to a large degree what we can consider as being a reasonable period of time to be consumed in attaining the object at stake. At the outset, regardless of what ideas we hold, we can all agree that *the orthodontic problem is concerned chiefly with growth and development; that the changes which occur during tooth movement in the structures adjacent to them, as well as in the muscular environment of these parts, are dependent upon certain physiologic factors inherent within the tissues themselves.* Furthermore, we can all agree that when the teeth are established in their normal relationship, *subsequent changes occur within the structures which are just as important as those which characterize actual tooth movement.* With the realization that early treatment has decided advantages, the average patient of today comes to us with a mixed dentition. This means that either during the primary stages of treatment, *but more frequently following it, certain groups of teeth must be shed and replaced by their permanent successors before the completion of masticatory apparatus is realized.*

The question of diagnosis, which, in reality, is the first and most important phase of treatment, is frequently overlooked, or if it is not wholly so, is concerned chiefly in selecting the type of appliance which is to be used for moving the teeth. How much thought, may I ask, is given to a study of the character and degree of abnormality present? How much consideration and study are given to the causes responsible for the deformity, and are they still in operation? Only a few words are consumed in asking this last question, but upon its solution depends the success of treatment. Doubtless we can all outline the changes necessary to restore the teeth, arches and jaws to their normal relationship, but unless the question of etiology has been solved or encouraging progress made toward this end, why go to the trouble of making a correction? The statement that the causes of malocclusion are all to be found *within the mouth or in causes directly related to occlusal functions, is a ridiculous assumption* in spite of the fact that it offers much comfort to those *who do orthodontia by formula.* When once uncovered, the correction of the cause of malocclusion immediately becomes an important phase of treatment which preferably should antedate tooth movement.

Orthodontic treatment, then, may be defined as that process in which the character and degree of abnormality is determined, the causes responsible for it uncovered and corrected, those changes necessary to restore the parts to normal brought about, and the normal functional relationship of the teeth, jaws and their related muscles established. These accomplishments should constitute what we may designate as *primary orthodontic treatment,* for, following them, changes *of equal importance to the final success of our work must occur.* Heretofore, *this secondary period* has been referred to as *retention,* but in view of the fact that the teeth and dental arches are not fixed units after tooth movement but, like any other assemblage of structure, are subject to modifications and changes which occur during growth and development, this phase of the work appears to us in a new light and *should be considered*

a part of treatment. The importance of care during this stage of treatment is just as important as when malocclusing teeth are being actively moved, and the effect and value of appliances are in many instances no less important than in the former period.

The period of time required for either primary or secondary treatment is dependent upon several factors not related directly to appliances. Of these, the age of the patient is of great importance, for the teeth of children during early youth and growth can be moved more expeditiously than during the period of adolescence or near maturity, because the adjacent tissues react more readily to the stimulus of pressure. Furthermore, the "growing process" of the dental arches and jaws is receiving that impetus which comes from developing teeth with their inherent tendency toward eruption and the resultant added bone development which must be created to support them. What we might term as *tissue tolerance* to appliances is greater in young children, due, no doubt, to the generous blood supply with which these parts are favored during the changes which characterize active growth. In spite of what we have designated as tissue tolerance, however, there is important evidence that rapidly moved deciduous teeth or deciduous teeth subjected to abuse during movement are prematurely lost, a fact which in itself should make us stop and wonder whether or not we should not *be more cautious in moving permanent teeth.*

Let us suppose that in the treatment of the majority of our patients of favorable orthodontic age, where the correction involves the restoration of normal arch form and relationship, that we move the teeth gently into their normal positions and relations, and let us assume for argument's sake that this has consumed a period of from six to ten months. Let us assume that there are still from ten to twelve deciduous teeth to be shed and at least an equal number of permanent successors to take their places. When may we say that primary orthodontic treatment is completed and secondary treatment commences? Are these deciduous teeth always shed on schedule and do their successors always follow in an orderly manner? Most certainly they do not, and frequently we are confronted with delays which run into months and years. Should the care of such patients during this period rest upon the shoulders of the orthodontist or should they be turned loose with a so-called *retainer* in place with the assurance given that treatment has been completed? With fair-minded men, the answer to this question could not long be in doubt, for until a case can be released from the restraint of all appliances, it is certainly not to be classed otherwise than under treatment.

In addition to the ordinary delays which occur while waiting for permanent teeth to erupt, we all too frequently come into contact with children whose mouths are unusually *erratic* and abnormal in this particular. This may mean that instead of waiting a few months, a period of years may elapse before some particular tooth or groups of teeth put in their appearance. The reason for such delays is not known to us, but may have its origin in some disturbance of metabolism resulting from lack of endocrine balance, or some other equally vague cause. Of course such cases are somewhat of a

rarity, but when they do occur, the orthodontist who is unfortunate enough to have them frequently is maligned "for dragging his work out indefinitely." In other words, his efforts to protect his patients' best interests frequently meet with criticism instead of appreciation. Other excusable delays may be occasioned by interrupted treatment due to illness, travel, "boarding school," and last, but by no means least, a lack of cooperation upon the part of the patient. These excusable delays are mentioned because there are undoubtedly cases which, through sheer incompetence upon the part of the operator, are prolonged needlessly. The work in such cases, however, is not characterized by *slow tooth* movement, but rather by *no tooth* movement. Even maloccluding teeth which are carried at a snail's pace must eventually reach their destination, but when the operator behind the appliance is entirely lacking in a fundamental knowledge of its operation, a case is apt to start nowhere, and get nowhere.

From a prominent sectarian group of orthodontists misinformation is being boadcast in favor of rapid treatment, the inference being made that through the magic influence of a certain patented appliance, *physiologic tooth movement* occurs, and, as a result, treatment is terminated in a period ranging from a few weeks to a few months. According to their plan, following this period of treatment a removable appliance is placed in the mouth to be worn for an indefinite period. This indefinite period is not listed as *treatment*, notwithstanding the fact that an appliance is necessary, but is given the name of *retention*.

How far, let us ask, has the promulgation of such ideas gone to correct real basic faults in our orthodontic knowledge? May we not ask what motive lies back of this propaganda? It is well to remember that the question of slow or rapid treatment is in reality not a new discussion in orthodontia, as will be apparent to those who have read orthodontic history. Has its present revival some ulterior motive? Would we be vulgar to suspect that this agitation has for its object the sale of patented appliances? Can it be construed as having value as *sales talk* to dentists and patients alike? "Treatment completed in a few months!!!" Then let us ask, is it the truth? Are cases completed simply because maloccluding teeth are moved into their supposed correct relationship?

If it were possible for any teacher or manufacturer to reduce orthodontic treatment to a simple formula so that it could literally be dispensed in packages, how marvelous that would be. Whether this will ever occur or not may be answered by surveying any other branch of the healing art and noting whether or not this has occurred elsewhere. That orthodontia has not been reduced to an exact science is apparent by the fact that all too frequently relapses occur after treatment, showing that either the original cause has not been removed or in the movement of the teeth the tissues have been abused to the extent that they are lacking in the vitality essential to carry through the process of adaptation to their new environment.

One well-known teacher of orthodontia has expressed the opinion that the rate at which teeth should be moved may be judged by the time it

takes an erupting tooth to travel from the gingiva to the occlusal plane. Why this particular period of tooth eruption should be selected as the index of speed for tooth movement was not made plain, but we might wonder why the distance from the gingiva to the occlusal plane is selected. Erupting teeth start moving far earlier than this period. Why not let us judge the speed for tooth movement by the time it takes a developing tooth to progress from its earliest formation to its full eruption? Would not one assumption be just as logical as the other?

The rapid movement of teeth is no act of magic, nor is the possibility for such a circumstance limited to any one appliance. The question we should consider is how rapidly should we move teeth and still maintain that favorable degree of balance within the structures surrounding them which will bring about the best results. In our endeavor to fulfill this requirement, we always have one sign which offers us some degree of guidance, and that is pain. We should bear in mind, however, that an inflammatory process may be in progress to some degree and the symptom of pain still be absent. In orthodontic tooth movement, especially in young children, the degree of tissue tolerance is great, but this should in no wise justify us in utilizing abusive measures.

In her building of masticatory apparatus, Nature does not send the teeth rushing through the tissues, nor does she attempt to complete their growth within a few months' time. What is the logic, then, of forcing groups of maloccluding teeth into correct relationship and then waiting for months and sometimes years for subsequently erupting teeth to take their positions? Why make the first period of treatment a matter of haste and near violence when such patients must be required to wear appliances of some sort for indefinite periods for the secondary treatment? Is there not a happy medium between the extremes of violent tooth movement and the snail-pace variety?

In the memorable experiments of Oppenheim, the character of force best adapted to bring about the necessary bone changes for favorable tooth movement, were amply demonstrated. Also, in an equally forceful and unmistakable manner were the results of violent tooth movement shown. Has anyone since that time brought forth evidence as conclusive or have they submitted even the semblance of proof that Oppenheim's conclusions were incorrect? Has not the clinical experience of nearly every careful practitioner proved that Oppenheim was right? These are facts to which we can well give our thoughts, and when the evidence is all in and the facts thoroughly analyzed, I believe we will continue to move teeth gently during the period of primary treatment, to give them watchful care and attention during the secondary period of treatment, and in both instances, refuse to join any movement which bears the semblance of a speed contest.

CONCLUSIONS

1. The misconception as to what constitutes orthodontic treatment is responsible for the mishandling of many cases, the resultant failures of which tend to put orthodontia in disrepute.

2. A conspicuous factor in confusing and misinforming those eager for orthodontic information is to be found in many of the advertisements appearing in our dental journals, as well as in propaganda which supports them.

3. Orthodontic treatment must not only include the restoration of the teeth, dental arches, jaws and their muscular environment to their normal relationship and function, but must be preceded by a diagnosis which includes an intelligent study of the cause or causes responsible.

4. When the cause or causes cannot be uncovered or encouraging progress be made toward this end, treatment should not be undertaken.

5. The elapsed time necessary for treatment depends primarily upon what must be accomplished. This is further conditioned by the age of the patient, the degree of cooperation given, the progress of those physiologic processes attendant upon growth changes, and whether or not they follow in an orderly manner.

6. The time spent for treatment should not be judged merely by the period required for active tooth movement, for this comprises primary treatment only.

7. During secondary treatment changes of such vital importance usually occur that in spite of the fact that appliances may be reduced to the minimum of simplicity, and their manner of operation be changed, responsibility for the care of cases during this period is just as great as during the former period.

8. Prolonged secondary treatment may be occasioned by the erratic and abnormal eruption of teeth whose presence is essential to complete treatment. Such cases, however, should not be confused with the work of incompetent dentists who "start nowhere and get nowhere" with their work.

9. Propaganda being broadcast in favor of rapid treatment, in which claims are made that cases are completed within a few weeks or at most a few months, is misleading and its proponents are laying themselves open to suspicion of lending themselves to a movement to create a sales demand for certain patented appliances.

10. During primary orthodontic treatment teeth should be gently and unalteringly moved into their correct relationship, but to tax the tissues to their limit of toleration is not in keeping with the best and most authoritative findings relating to this phase of treatment.

11. In safeguarding our patients' interests, it frequently becomes necessary to spend far longer periods in treatment than preliminary surveys indicate, but when such exigencies arise, our obligations do not cease until we have done everything humanly possible to insure ultimate success.

THE TREND OF ORTHODONTIA AND THE PROBLEM OF PROPER EDUCATION*

By Jos. D. Eby, D.D.S., New York, N. Y.

ALTHOUGH it may be inappropriate, I cannot refrain from extending to the members of the American Society of Orthodontists an expression of my cordial best wishes on this occasion of the annual meeting held in my old home. It seems only natural that I should be playing the rôle of host, instead of that of a guest, particularly in view of the past, and the unique fact that we are now within a stone's throw of the former home of our true friend, and my great benefactor, Dr. Hinman.

Having recently served a term of three years on the Board of Censors of this organization, and having assisted my fellow committeemen with earnest endeavor in scouring the country for suitable material for our programs, no one should realize more keenly than myself the fact that the time of this organization is exceedingly valuable; that the members have traveled great distances in order to garner knowledge, and that to usurp such time in the presentation of personal or irrelevant subjects is a very serious matter.

The first principle in writing a paper should be to have a message to give one's audience which they have not had, and which will be helpful to them. In my situation I have endeavored to draw upon the entire field of orthodontic science in its present status; and in choosing this subject to present for your consideration today, I can confess that it has risen from the depths of my heart as being the most serious problem with which we are confronted.

I do not wish to appear as a critic to blame or to condemn; for alas, that is too easy. It is equally loathsome to presume upon the efforts of those who have gone before us in an attempt to transform their best motives into our own ways of thinking, and render judgment accordingly. I therefore wish to appear before you in the spirit of the greatest good-will towards all, realizing what a rare opportunity this is to be surrounded by men, with most of whom I enjoy close personal friendships through the many and varied pursuits of our professional careers.

First admitting the premise that our entire motive is in the best interests of the future, we should be able to indulge in a frank and friendly discussion of the problems which confront us.

In qualifying to discuss this subject, my experience embraces a period of seven years in the undergraduate teaching of orthodontics, eight postgraduate classes, as well as organization work, and many other activities over a wide field, which have given me an almost intimate touch with the general orthodontic progress of the past twenty years.

In reviewing the history of orthodontia, it is of little value to the thought in hand to take into account that which transpired prior to 1900, except to

*Read before the Twenty-fourth Annual Meeting of the American Society of Orthodontists.

assume that the value and future of this science had been sufficiently established and foreseen as to have produced the first organized postgraduate training shortly thereafter.

It is not my intention at this time to analyze or criticize any of the past or present postgraduate schools of orthodontia, except to draw from the aspects resulting some observations for the benefit of the future. In so far as these schools have endeavored to supply a demand, however insufficient and inadequate they may have been, we cannot claim that they have not been as well adapted as possible to the particular era of orthodontic evolution in which they existed. The most commendable elements which can be ascribed to these schools have been the coordinate care in which the instructors were selected, the exceeding great care with which the students were admitted, and the manner in which the courses have been operated in an attempt to render their graduates as competent as possible to practice orthodontia as a specialty or otherwise.

To the extent to which the schools of orthodontia to date have diverted from these basic motives and have operated as institutions for commercial gain, particularly placing a false viewpoint on the subject and sending men into the field with a misconception, thus producing the type of orthodontists who are ridiculously inefficient and grotesquely boastful of poor achievements, have they committed a grave offense, which cannot be denied or opened for rebuttal.

In the admission of the fact that of the various elements which have brought orthodontia to its present-day standards, the postgraduate schools of the past have played an important part, it nevertheless requires but little personal knowledge of the real pioneers who have developed the specialty during the past twenty odd years, and those who may be pointed to as the representative men of today, to realize that these schools have merely been the vehicles which have carried these men apace for the time, in order to properly organize their future energies which were inherent within them prior to their postgraduate teachings.

Besides the postgraduate schools which have operated to date, the remainder portion of orthodontia as it is practiced has been moulded by current conception as it has emanated from comparatively few sources, or been made convenient to practice in an empirical way as provided by manufactured materials and other methods of ready access. While progress has been registered steadily and our achievements are better than ever before, at the same time, the general field of orthodontia is filled with many weaknesses and fallacies which are deplorable.

Orthodontia of today requires a sweeping reform, and it has been proved many times in the past that the underlying elements of control are sensitive to reform on but slight provocation. It will be remembered that only a few years past the exponents of fixed appliances cast their eyes downward in a look of disdain upon those who, adhering to their beliefs in the value of springs, operated removable appliances. It may be that Oppenheim found the time to be ripe for the presentation of his work, but it nevertheless remained for only a single presentation of unverified research in the principles

of tissue changes to immediately cause the exponents of fixed appliances to engage almost entirely in a change of designs, whereby their intermittent forces were replaced largely by other methods more constant.

This process brought along the evolution of certain appliances and other modifications with which we are familiar, until recent years have brought further refinements in the form of both lingual and labial appliances employing auxiliary springs and other means of very delicately controlled stimulation.

Inasmuch as orthodontia is a part of dentistry, it was essential that it had to evolve from a mechanical origin. The trend therefore is from the experimental, obscure and empirical source of gross mechanics toward the more amplified facts which embrace every phase of dental and medical science dealing with the origin and growth of highly vital tissues normally, as well as every condition which digresses from the normal, in which the mouth and teeth are but the dental index of the whole physical and mental make-up of the individual. We are now on the verge of evolution wherein the brilliant sun of a new era, forecast already by its bright rays, is about to burst upon us.

Alluding again to the most objectionable phase of orthodontia of today, that is, the mechanical side of the question, we find a minimum-maximum range of principles entirely too extreme to admit that all are in harmony with the laws of nature. Throughout the length and breadth of the land we find the orthodontist who is a strong exponent of rapid treatment; and through the various gradations, we find his neighbor treating malocclusions with very delicate and gentle springs. Where are our scientists and researchers who will condone this plight? Where the investigators and the resources that should prove out this situation promptly and conclusively?

An analysis of this condition will prove that recent research has been so neglected that it has failed to impress the undecided, and has not drawn orthodontists into a more coordinate admission as to the truths of natural laws underlying our work. To supplement this condition, however, we still have the dogmatic examples of those who have dominated and controlled the influences of appliance design; until individual practitioners in this chaotic state have been induced to practice this or that method only as their imperfect judgment shows the selection of appliances or the appliances from which they seemed to get the best results first-hand.

I wish to maintain the fact before you that if the phenomena of changes in vital tissue as controlled by the variations in metabolism are established, or can be established, and if our prime motive is to assist these natural elements, there can then be one and only one proper degree of assistance, whether it be mechanical, muscular or otherwise. It is just as great a fallacy to assume the hypothesis that teeth may be moved very rapidly (thus practically calling upon the elasticity of bone in its original formation, and requiring an interminate period of retention, only to invite a relapse) as it would be to spend a lifetime in the correction of a malocclusion to be made perfect in old age. I would no more expect an orthodontist to regulate a severe malocclusion in six weeks than to expect him to bend or break a

flower to straighten it out of the position from whence it had been attracted by the sun. It would be natural to expect the man who would turn the plant around to at least be that much of a good orthodontist.

It is my belief that there must be some very positive research reported, and that as soon as possible, in order to modify the designs of appliances into the narrow elements of exact underlying specifications. For so deeply entrenched are most of the damaging appliances of today, either from the survival of time in use or by the prestige of their exponents, that nothing short of a powerful blast can render them obsolete.

With the recognition of the range of mechanical stimulation thus specified, within bounds of which all variations of design must be confined, there then must begin to grow and constantly increase the great scope of constituent elements which are essential in scientific principle for the ultimate production of an orthodontia practiced by orthodontists who are prepared to render acceptable service, well grounded in all subjects that pertain to the growth and well-being of the whole child, and who can synchronize orthodontic treatment with all other phases of those physical elements which produce the best constitution and tissue tone in the normal individual.

A very unusual experience came to me at the conclusion of nearly four years of service in the army, which was to make the decision as to whether I should enter that undefined field called oral surgery or return to my first love, orthodontia. During this interval I had viewed from the sidelines many interesting developments and distinct advancements in orthodontia, and in the final conclusion of this situation the results of my investigations proved so clearly that the average oral surgical intervention, like every other phase of dental operation, deals with those retrogressive processes which accompany or are associated with physical decline.

In this respect orthodontia is the opposite to every other phase of dental and maxillofacial science, because of the direct preventive and corrective nature of its service in the early recognition and proper care resulting from the competent administration of the best orthodontic treatment. As a result of this it was a very easy matter to choose a future associated with such service to humanity, realizing none the less in importance that all other dental work must be most scientifically performed.

As previously stated, orthodontia has reached a point far distant from its original mechanical source, and in continuing to advance in the same direction it has reached a point to where its practice is intimately associated with every phase of medical science which is included in the special work of the pediatrist, nutritional expert, the metabolist, and all other sciences which embrace the control of disease by health therapy and the care of children.

We are now face to face with the fact that the teeth are but incidental objects in the science of orthodontia; that while we are interested in their correct positions and may utilize them as anchorages for apparatus designed to accomplish tooth movement, our first interest must center in the bone and its nourishment, as being the substance which has encased within its cells the secret of true orthodontic science.

Every case of malocclusion as well as every case of normal occlusion reveals in its ultimate sequela the fact that form in bone and tooth position is controlled by function. With this fact clearly in mind, it is difficult to conceive that any method of practice should not be an effort to copy mechanically the same elements which have produced a given condition through the influences which causative factors have produced on function. This point again refutes all radical principles, including too rapid treatment, where nature is induced to grow or reform bone so unreasonably, as though working on the theory that teeth are sprung to other positions through the elasticity of bone, and will become passive after long retention. How are the exponents of such principles of appliances and treatment going to explain the absorption of the roots of teeth under such procedure?

To the farsighted man immediate development is never satisfactory, and to be dissatisfied is a sure sign of progress. The specialty of orthodontia measured by decades is merely an infant, just coming to the point where it is fully realized that it has to offer to humanity when properly practiced one of the very greatest services in medical science.

It is my opinion that one of the most unfortunate conditions at the present time is our status concerning orthodontic education, because of the fact that both undergraduate and postgraduate teaching is so poorly defined. There is absolutely no use to consider further means to the end of supplying practical orthodontists in sufficient numbers, until there is a recognized basic formula wherein the mechanical principles of accepted appliances will be uniformly consistent with universally known and admitted laws of tooth movement.

In all of the various specialties of medicine, such as in the specialties of the brain, eye, ear, nose and throat, orthopedic, pediatric, and numerous others, the physician has to pursue a course along established lines. Following graduation comes the usual internship in the hospital of his choice. Then he must remain on the staff as an attendant for a period of from one to three years. After this as a rule he becomes associated with one of the more experienced and competent specialists in his line. In addition to this, the various branches of medicine have established centers wherein highly specialized data are developed to such a degree that the necessary educational knowledge can be readily obtained.

The first problem existing taday from an educational standpoint is that of the undergraduate foundation. It has proved a useless waste of time to treat any subject in the undergraduate dental curriculum as a separate entity, and that duplicity of teaching could be avoided wherein various subjects are dovetailed. Therefore, the basic thought in undergraduate orthodontia should be to draw from the other subjects taught those phases necessary, and combine them with purely orthodontic material in such a manner that the first accomplishment would be the proper preparation of the mind of every graduate as to a true vision of orthodontia, and by all means to avoid any misconception thereof.

It appears to me that the greatest trouble in the undergraduate orthodontic problem throughout the country relates back to the absence of a true

conception of defined orthodontia to serve as a background for uniform teaching, which places the average professor of orthodontics on his own resources with a poor foundation, and subject to the variations of his own aptitude as a teacher. Little wonder is it that such a state of confusion exists.

It would be a wonderful accomplishment if a board of this country's very best men, acting under the auspices of this organization, could solve this problem and present a course which would be properly recognized and universally adopted in the schools and colleges.

Another serious fact is that the authorities who control dental schools are not awake to the orthodontic problem and fail to provide adequately for a subject of this importance. It is a sad fact that when a paper on orthodontia is read before a general dental society one's very best friends will be either absent or will be seen leaving the room, so little do they realize the vast and wonderful preventive as well as corrective service which a little intelligence on their parts can administer through this medium to the people they are to serve. Instead, they seem content to attempt to repair the destructive results of such neglect.

The object of all postgraduate training should be such a practical education as to impart sufficient ability, so that the recipients of this work can be of real service to patients. There is no question but that the basic demands for such institutions should be conducted under the organization and direction of universities. I am positive in my own mind that the time is now at hand when the fundamental subjects of orthodontia may be defined. There is no doubt but that the postgraduate student could accomplish much by a course of reading of selected textbooks which would be recognized as standard. I am firm in my belief that these centers should exercise jealous care in the selection of applicants for students. It would be a very great advantage if possible for the American Society of Orthodontists to organize a commission who would outline the postgraduate schedule so indisputably that it could be adopted uniformly by schools and universities throughout the country. There is not a bit of use in asking the human mind to retain teaching unless it is carefully prepared to assimilate facts and combine them into the working whole of uniform sequence.

It is the height of folly and a sheer waste of precious time and money to a student to thrust a lot of scrambled theories upon him, and then poke them down with an even more scrambled lot of appliances. The first essential in the future postgraduate teaching under standardized organizations and curricula must be to define the theoretical teaching so clearly as to establish uniform principles of treatment represented by definitely specified designs of appliances, equally consistent from start to finish. In this way a definite specialty is established. In this way the consistency of sequence in the practice of correct principles will govern and control the finer points of treatment. Instead of having an incoordinate jumble of experimental practices in which numerous designs of appliances are frequently changed, an ordinate adaptation of appliances may be started in adherence with the basic rules involved in the individual cases and continued throughout proper channels to successful results.

In order to arrive at a satisfactory solution of all of these problems we may need men who are overdeveloped in certain directions to show us the way to the future, because it is by careful comparison and reflection that knowledge is sifted and progress registered. I still maintain that the secret of the entire situation is the indispensable recognition of certain basic facts as brought out by proved research, that we are either compelled to adhere to or to be scorned at. It is only when men absolutely fear for their own safety through fright which reveals their work in its true light that sweeping radical changes are effected, and this is what orthodontia needs.

I would like to see this organization authorize the expenditure of a suitable sum of money to the individual, group or institution who can prove to a committee that they are prepared to carry out an exhaustive histologic research of bone in the mouths of monkeys in the light of modern knowledge, similar to the work which Oppenheim performed twenty years ago. This research should test out the full range of appliance design and every degree of applied force as administered today. I believe that this one signal point alone would ring loud the clarion bell of truth which would force many men to divert from the methods which are wrong and supply to orthodontic science, education and service the most comprehensive elements required to properly direct the future.

To summarize this general situation in conclusion, sufficient facts are known to facilitate the reorganization of orthodontic teaching in our schools and colleges. This course should refrain from unnecessary encroachment upon other subjects taught which have a bearing on general orthodontic knowledge, which should be confined to the other departments. The didactic lectures should be devoted exclusively to those phases of medical science which orthodontia embraces and a true version of orthodontics per se.

The technical and clinical work should be confined strictly to the mechanical applications and interpretations of the scientific principles taught. The clinics should consist of only a very few cases under treatment performed by the professor or his competent associates, and should not be conducted with the aim of being self-supporting or a means of revenue to the institution. Senior and Junior students may be given examinations, required to write theses, and engage in certain technical work on models, which would thoroughly orient the basic principles of band-making, appliance technic and other mechanical principles. By such easily regulated methods as this a complex situation would be rendered simple and comprehensive, and in this way the first few strokes by the artist's brush would prepare the correct background for the future.

In postgraduate training there appear two great phases which must be taken into account in order to regulate other conditions attendant. First is the situation concerning the recent graduate, second the seasoned practitioner. As a rule the recent graduate, who selects further study in orthodontics is in a position to adapt himself more readily to a different plan of teaching than the seasoned practitioner. His general resources and the usual absence of an office and family to maintain permit of a draft on his time for preparation wherein the best of teaching methods may be considered.

In this case there is no doubt but that at least one year should be spent in postgraduate work, including such lectures, reading, examinations, technical work and prolonged clinical experience under competent demonstrators as can be formulated.

I am of the opinion that orthodontists thus prepared should contemplate an association with an older, established specialist, or enter under the balancing influences of a group practice controlled by seasoned men for an extended period of orientation to everything which pertains to a successful practice. In this way the best of administrative phases as well as the adaptation of practical principles may be gained, whereas the pitfalls and stumbling-blocks in the way of a raw specialist starting practice alone may be avoided, thus saving the learning of these lessons by experience at the expense of modified success or failure affecting both patients and operators.

There are many reasons why branching into the specialty of orthodontia becomes attractive to many seasoned general practitioners, and there are also many reasons why these men should be attracted and why they should excel in orthodontia. Personally, I am highly in favor of an experience in general practice of at least three to five years in order that that finer sense of seasoned judgment may control many decisions which have to be made by the orthodontist and through which medium it can be done best. It is a very difficult thing to demand of a seasoned practitioner that he should make the radical changes necessary in order to submit himself to a one-year postgraduate course in any subject, thereby preventing men who would eventually become most reliable standard bearers in this great work from exercising their talents to the best advantage. I believe that at least in the beginning of the new order of things these men should be allowed to qualify for a shorter period of institutional work by the use of a correspondence course of reading and examinations. It would also be easy enough for them to perform certain technical requirements in their offices if carefully described illustrations could be sent to them and their work returned for criticism and grading until it had been pronounced satisfactory. One year of such carefully planned work should supplement several months of a one-year course otherwise spent. In this way the student would be in such fine tune with the situation that the personal contact of lecturers and demonstrators would put the finishing touches on most of the theoretical and practical subjects and leave the major portion of their time for clinical work. One argument against this plan would be the fact that such students could not follow the cases into advanced stages of completion.

The science of orthodontia has already fully proved that in order to be efficiently practiced it justifies undivided thought and effort, which, with the necessity of being surrounded by suitable equipment, has established it as a specialty. This situation, however true, does not answer the great question of supplying the need wherever the wonderful preventive and corrective benefits should be applied. The question which remains to be answered is that of proper orthodontic service furnished in every community and every land.

The next step to be taken in this direction reverts to undergraduate

teaching and the proper methods which will render the general practitioner competent to recognize malocclusion in its proper sense, and to be able to administer the simpler methods of treatment in the earlier years of childhood, when such work is largely a problem of simple intervention with apparatus from time to time, in order to control growth as the individual develops.

It is also my firm belief that the final outcome of the solution of many of our complicated problems at present will be a simplification of methods of practice, so that when once the dentist or specialist has gained a true vision of orthodontia the scope of practical service will be greatly increased. In the larger cities this will tend towards the better economical adjustment of clinics, and will overcome many of the complications which have prevented them from being successfully conducted up to the present time. As for the regular postgraduate course for the production of specialists, I would be greatly disappointed, and would feel that a serious backset to progress would occur unless all of the future postgraduate schools employed the same subjects and methods of teaching. If theoretical, practical and clinical requisites based on the bone cell in the first instance, orientation of appliance design in the second instance, and general methods of practice in the third instance can be so standardized, the first thing a dental school should procure to start a postgraduate department of orthodontia would be a written outline of specifications to which it would conform, just as in the undergraduate departments. In this manner six to eight centers could be established throughout the United States all offering an identical course of instruction by teachers who through the medium of conferences and intimate understanding would remain in such close touch as to exchange their best experiences. This would tend to a unity of purpose and action which would be inestimable in its results.

The American Society of Orthodontists at this time should recognize the great work which a certain number of unselfish orthodontists have contributed to the progress of our science and practice during the past decade. There is a small group of scientific minds who have labored almost singlehanded in the pursuit of those principles which in their knowledge and belief constitute true orthodontia. There are others who in their wake have gained an insight in the practical application of these scientific facts which their associates have revealed, and it is to these men with their unselfish sense of service and fellowship, their writings and teachings that all honor must be ascribed.

The spirit which has actuated these men may be pointed to with the pride of unselfish attainment. What of those whose pursuits have been based on selfish motives and who are willing to subsidize this great science and service under the influences and control of their own prepossessions?

In the words of Dr. Hinman, "No individual in this audience can live his life unto himself. Your life must be an influence on some other life. Is this influence of your life for the betterment of mankind, or are you devoting your energies to the gratification of selfish aims? Are you willing to give of your time and the talents with which you are endowed, and are

you willing to give these things for the benefit of others? This is the supreme test."

Let us all combine with head, heart and hand, each with our individual contribution, however great or small, to the preparation of the orthodontia of tomorrow. Let us not take the gems of knowledge gleaned by our great thinkers and nibble at them critically. Let us not view their work as if to precondemn, but instead let us combine our interests, stimulate them with confidence and assist in the volumes of work ahead toward the ends of great accomplishments.

DISCUSSION

Dr. A. LeRoy Johnson.—It is very gratifying to me to have been asked to open the discussion of this paper by Dr. Eby. The subject is of particular interest to me. So in spite of my intention to attend this meeting as an auditor only, the opportunity given me by the Board of Censors could not lightly be passed by.

The tenor of the paper presented by the essayist is beyond question. It breathes a spirit of lofty courage that commands respect. He has presented his beliefs in unmistakable terms. He has stated his opinions in the hope of getting ours. He asks this society to realize its opportunities, and pleads for action that may help to establish orthodontia more definitely in the field of health service. The character of the presentation merits a most courteous and serious consideration.

The questions raised by the essayist are timely. The discussion of the present status of orthodontia; the emphasis of the urgent need of research in orthodontic problems; the criticism of the nature of undergraduate instruction, and suggestions as to the character of graduate work are the subjects presented for our consideration. And I do not feel in saying that these are questions vital in the field of dental education that I exhibit the traditional perverted view of the specialist. The subject matter of orthodontia gives it a very important place in general dentistry. The concept of normal occlusion; the knowledge of the phenomena of the development of the masticatory apparatus, and the consideration of the functional interaction of the teeth with other tissues is the material of orthodontia and the foundation of dental practice. Thus I believe that a discussion of the questions raised by the essayist is particularly relevant now when the dental curriculum is in a state of flux.

In regard to the present status of orthodontia, the essayist says: "While progress has been registered steadily and our achievements are better than ever before, at the same time, the general field of orthodontia is filled with many weaknesses and fallacies which are deplorable." No true student of orthodontia will question this statement. We who face the thrusts of keen students well grounded in science are perhaps more conscious of the holes in our armor than are those who limit their activities to private practice. There are students in the dental schools who do not accept everything at its face value. A system of logic which embodies contradications of established scientific principles means little to them. They want evidence. They ask for truth. They readily sense the "weaknesses and fallacies" referred to by the essayist.

There are periods in the evolution of any project, be it a commercial enterprise or a branch of medicine when it is necessary to take an account of stock. Habitual methods of doing things carry on until the accumulation of knowledge and changing conditions question old ways and suggest new ones. Modification of methods and ideals is the inevitable consequence of growth. Moreover it is axiomatic that the heresy of one age is the orthodoxy of the next. Although developing pains hurt, they lead to larger life. Orthodontia has lived to the time when an accounting of stock is necessary. We need to inventory our ideas; methods, and results to determine the direction of further progress.

The essayist emphasizes the urgent need of scientific research. He says, "It is my belief that there must be some very positive research reported, and that as soon as possible." In my opinion this is the crying need of today. The two methods of investigation should

be employed, i.e., quantitative analysis and experimental study. Quantitative analysis is determining the frequency of the occurrence of different kinds of things, or determining the frequency of the occurrence of different attributes of things. This is the sort of an investigation that can be done from case records by those engaged in private practice. We want to know not that an isolated case or two have responded to a certain method of treatment, although this is interesting and valuable information, but it is more important to determine what percentage of a large number of cases have been treated successfully and of these successful cases what percentage can reasonably be accepted as exhibiting the direct effect of a specific method of treatment. We want statistical data from investigations of sufficient magnitude to establish facts and from these facts derive principles upon which to practice.

We have been jumping from the statement of one so-called authority to another always expecting a panacea in the latest innovation. Instead of studying facts, evidence, conditions, in the light of accepted biologic principles and endeavoring to conform the mechanics of treatment to them, we have directed the greater part of our energy to the creation of appliances for the purpose of doing things we are not sure should be done.

In regard to experimental research, the essayist refers to the work of Oppenheim on "Tissue Changes Incident to Tooth Movement" and shows how sensitive the profession is to new ideas. Oppenheim reported a splendid piece of work and the profession revealed its spirit of ready response in the recognition made of it. Nevertheless we owe it to Oppenheim; to ourselves, and to the public to repeat these experiments and perform others of like nature as it is only in this way that the facts relative to tissue changes incident to tooth movement can be known. From the very nature of experimental investigation it must be verified, it must be repeated by others before it can be accepted and utilized in practice.

Pearson says, in his grammar of science, "Criticism is the life of science. It is the safeguard of progress." It can scarcely be questioned that when the truth or falsehood of an observation may have important bearing on practice that overdoubt is of greater value than overcredulity. Before incorporating any new idea from whatever source, it should first be studied in the light of basic principles and accepted only when substantiated by statistical data. Raymond Pearl, in his *Medical Biometry and Statistics* (pages 22 and 23) quotes Dr. Lawrason Brown in the *American Review of Tuberculosis*, September, 1920, as saying, "None of you will contradict me when I say that statistics are very dry, but some of you may dispute me when I say that only by statistics does the world lay a medical advance. Consider what knowledge is and you will see how inseparable it is from statistics. Medicine is not an exact science, and diagnosis rests largely upon the law of probability which in turn is statistical." "Do not misunderstand me, (he says) this is not an argument in favor of dry statistical articles which we all prefer to avoid reading. But if I make you see how important it is for us to cease using the pet phrase 'my personal experience' except when we have sufficient data to support it, I shall have accomplished what I had hoped for."

The essayist reminds us that "—both undergraduate and graduate teaching are poorly defined." Generally speaking it is the consensus of opinion, I believe, that the undergraduate should be given the rudiments, the field of a special branch like orthodontia should be interpreted for him; a point of view developed, with attempts to stimulate straight habits of thinking and to question intelligently. Personally I am not in sympathy with those who attempt to make orthodontists in the undergraduate course. I think as dental education is organized at present, that such methods cannot be justified on any grounds whatsoever.

I believe that graduate work should be built upon, that is, centered upon the clinic. A well-organized clinic where careful case records are kept is the most important source of graduate instruction. The clinic should include not only the treatment of selected typical cases by different kinds of appliances, but it should include a consulting clinic as well. The discussion with men of experience of all kinds of cases and conditions is a pregnant source of information for the student. For this reason graduate work can best be done in the large centers of population.

The results of original investigation presented in thesis form should be required of each student, also the same in two or more courses in other departments of the university.

A year's work is certainly none too long to qualify a man for practice. In less time than this he cannot see the results of his own operations, which is a very important factor in education, without which he cannot develop the point of view that comes from collateral reading and research.

The creation of a course that will be at all satisfactory is a matter of evolution. Courses organized on the basis of a years duration can be made to yield original work that will help tremendously in this evolution. Animal experiments can be carried on very efficiently and statistical studies can be made in conjunction with graduate work so the student of one year will build for the student of the next. Time is essential.

In spite of what we think should be done we must remember that all dental education is very much in the air. Dentistry is floundering in a sea of educational possibilities. Funds are too few to illuminate the star of research to direct its course. Thus we not only have to consider what we think should be the content of the courses, undergraduate and graduate, but, at the same time, realize that in the process of organization we have conditions to face that will cause us to modify our ideals.

The idea which the essayist advances of the organization of a commission to outline a postgraduate schedule to be "adopted uniformly by certain schools of the country" is, I think, open to question. Any one attempting to organize graduate work today would welcome a commission or board of orthodontists with whom he could discuss his problems. Questions are continually arising which require more than one head to solve. But an attempt to standardize courses will not be looked on with favor. One of the most fatal moves we could make would be the institution of a scientific hierarchy which would brand as heretical all doubt as to its conclusions, all criticism of its results. I can imagine the appointment of a commission of so reactionary a character that it would serve merely as a sounding board for rational ideas.

We must face the question of the future of orthodontia in the spirit the essayist bids us, following the truth even though it cuts away doctrine which seems to be basic now. In problems of education we are building for the future, for those to come. Our position is expressed by Thayer:

> "We may not change, but a nobler race of men
> Shall walk beneath the stars and wander by the shore,
> I cannot guess their glory, but I think the sky and sea
> Will bring to them more gladness than they brought to us of yore."

Dr. Ralph R. Byrnes.—In being called upon to discuss this paper I should like to say that I may not know what I *am* (one's friends and enemies seldom agree on this) but I certainly know what I am *not,* and on this occasion orthodontist stands out loudest and longest. After listening to some of the varied papers presented here during this most interesting week, I am wondering how many of you earnest—not to say honest—gentlemen are willing to join me in a similar claim! It seems to me the poet must have had such gatherings in mind when he wrote:

> "All things I thought I knew,
> But now confess,
> The more I know I know,
> I know the less."

Recently I returned from a meeting of the American Association of Dental Schools at Chicago, which I am sure Dr. Eby would have enjoyed, for the major portion of the time and thought was devoted to curricula and what we do *not* know about teaching. He might have been astounded with a statement made by a dean of one of our most prominent dental schools, that, given a pattern, a student in engineering could prepare a crown for a tooth which creditably would compare with the product of a student in his crown and bridge technic laboratory. This in support of his argument for cutting down technics. Personally (and I so answered him) I know of no other way to develop perfection but by practice.

It may be a combination of the impressions made upon my mind at that meeting and at this meeting which makes me particularly receptive to a sentiment expressed on the cover of a recent bulletin of the Alabama State Dental Society, which ran about as follows:

"He who knows not, and knows not that he knows not, is asleep. Awaken him.
He who knows not and knows that he knows not, is awake. Speak to him.
He who knows and knows that he knows, is a wise man. Listen to him."

Any discussion of mine must be addressed to that portion of this excellent paper which deals with the educational phase of the subject. It might be wise for me further to confine myself to that portion of the educational phase dealing with undergraduate instruction. I do not promise so to do, however.

Dr. Eby properly decries the fact that both undergraduate and postgraduate teaching is so poorly defined. Some one has questioned the possibility of defining a thing which cannot be *con*fined. I question further whether really we wish to *con*fine this subject at the expense of being able to *de*fine it. This leads me to a consideration of Dr. Eby's suggestion for the organization of a commission to outline the postgraduate schedule so *indisputably* that it could be adopted uniformly by a number of universities through the country. I agree with him up to the use of the term "indisputably" as this suggests mandatory power which to my mind is one of the most effective throttlers of educational initiative and efficiency. Standardization is a wonderful economic factor in the industrial fabric of America and one by which unquestionably this country has been able to offset the cheap labor of Europe, but educationally it can be carried to an extreme which may quash the individuality of both student and institution. It then becomes a fault peculiar to the American economic mind. It is one of the faults with the public schools today. I have two children. One of them *belongs* in the public schools. It would be an educational crime to hamstring the active mind of the other by sending her to public school.

Any teacher worth his salt thinks his subject the most important in the curriculum and continually cries for more time for its presentation. It is the duty of the dean of a school to try to strike a balance in the subjects of the curriculum in order that the product—that is the student—may constitute a well-balanced whole. The undergraduate school cannot equitably hope to do other than to develop such an appreciation of the subject of orthodontia by the student as will enable him *primarily* to recognize in his patient after graduation, advisability for orthodontic correction and, *secondarily,* in extreme circumstanecs, possibly to undertake some of the simpler corrections. In my humble opinion, the arrangement of the undergraduate curriculum should not attempt more than this, and the presentation of the subject of orthodontia to the undergraduate should be as broad as is consistent with the time available. Education in its highest accomplishment should prepare a man to carry on in that line of endeavor to which he finds himself, his temperament, and his mind peculiarly fitted. In so far as a school turns out a finished product, just so far has that school failed with that particular student. In so far as a school inspires its product to further endeavor, just so far does that school live up to its highest possibilities, be it an undergraduate or a postgraduate school.

For fear that the devotees at this meeting perchance already are suffering with mental indigestion, and having been preceded in this discussion by one eminently qualified to better interest this gathering, I am willing further to engage the time of this association.

In closing I wish to thank Dr. Eby for his splendid paper, which sorely tempted me to go into detailed commendation. May I leave with you this thought:

"That man is best educated whose whole being, body and mind, is most symmetrically and harmoniously developed, and whose powers, both physical and mental, have been strengthened and cultured in accordance with the laws of normal growth."

Dr. Oren A. Oliver.—I deeply regret my inability to have been present at the reading of so important a paper as the present contribution. What I am able to offer in discussion and comment has been gained from careful study of the essay, of which Dr. Eby was kind enough to furnish me an advance copy.

I am particularly struck, as must be every one else of the American Society, with the timeliness of this essay. There can be no question of the fact that the present methods of teaching orthodontia are hopelessly inadequate and that much time will have to pass before any final plan is to be realized. It is my personal view that practically nothing beyond basic principles is to be attained in undergraduate teaching in orthodontia, any more than we would have any right to expect in any other highly specialized field of endeavor. It seems to me that the aim of dental teaching should be directed specifically toward the production of graduates well grounded in the fundamentals of their subject. We have undoubtedly been far too lenient in this respect in the past and have been too much influenced by the mechanical and operative aspects of the senior curriculum. Dr. Eby has very properly emphasized the necessity of teaching the undergraduate students the biologic essentials which are concerned with tooth movement, arch development and growth in general, and of firmly training them in the recognition of the several factors which are concerned in the diagnosis of malocclusion. We need only remind ourselves here that the diagnosis, though not necessarily the classification, of malocclusion is as much the responsibility of the dentist in general practice as it is of his colleagues in orthodontia, and that it is very definitely the duty of the orthodontists engaged in undergraduate teaching to see to it that this viewpoint is held before the student during his stay in school. Beyond this, together with the teaching of the treatment of a small group of relatively simple types of malocclusion, we cannot expect to go. It is my own feeling that the mechanical aspect of orthodontia may be handled in this way and with a view of teaching the undergraduate rather what not to do than how to successfully treat a case. The balance of the problem of teaching of pure orthodontia would then seem to resolve itself into that of the institution of appropriate facilities for postgraduate work of the most competent type obtainable.

I seriously doubt that any agreement or unanimity of view can be looked for here at any time soon. There is much to recommend the view that orthodontia or any other specialized field of dentistry should be entered into only after a given individual has proved his capacity as a good dentist in general practice; though this attitude would undoubtedly be regarded as unreasonable by a good many teachers.

Dr. Eby has taken the position that in specialties of medicine the course of training has been established along certain fixed lines and that specialists become qualified only after a college course, an internship, a staff association and later an association with some established worker. This view might be misleading in that it represents an ideal and not an actuality. As a matter of fact, all that a prospective nose and throat specialist need do is to graduate in medicine, take a postgraduate course of varying length and then announce himself as an expert in his field. What his future will develop will depend entirely upon his capacity for self-instruction and study.

This society can do nothing better than to stimulate thought and serious study toward the larger problem of what constitutes adequate postgraduate facilities. This would seem to present a particular field for valuable and constructive work upon which our organization might well embark.

In conclusion, I desire to compliment the essayist upon his presentation which clearly shows that this topic has occupied much of his thought and attention.

Dr. Walter H. Ellis.—The essayist is, indeed, one of our hosts and well has he played that rôle here in his old home. We, of New York feel a little guilty in having stolen him away, but if the hospitality of his old friends here in Atlanta is any criterion, his sunny smile is indigenous to the soil and they need him here less than do we of the North. His ripe experience in our field makes his essay a timely and authoritative one. He has well sketched the development of orthodontia from its somewhat empirical beginnings to its truly scientific practice of today.

He has spoken truth when he said, "Orthodontia in its practice is intimately associated with every phase of medical science which is included in the special work of the pediatrist, nutritional expert, the metabolist and all other sciences which embrace the control of disease by health therapy and the care of children." In saying this he states what we all know to be true, but so few state clearly. Let us think this phrase through as relating to orthodontic pedagogy. If it means anything at all, it means that orthodontia takes its place as an integral part of medical science and is a specialty of medicine. Therefore, to adequately prepare the student of orthodontia he must not study dentistry alone, but medicine as well, or better still medicine first. The broad training in medicine will link up our specialty with those other specialties dealing with children as no other training will. This can then be followed by that part of the dental course which will best prepare the way for stomatologic work. The postgraduate school of orthodontia will follow in logical sequence to give this specialized training.

In my opinion it is only by such broad training that the orthodontist of the future should be educated. Any young men who have come to me for guidance have been so advised. Orthodontic problems that are somewhat obscure today might then be worked out with a clear understanding of intimately associating factors which are not now fully appreciated by those having the more limited and specialized training usually obtained in dental schools. Those of us having hospital staff experience, intimate association, and frequent consultation with men trained in medicine will more readily appreciate this statement. Yes, we need the very best postgraduate schools for the teaching of orthodontia but before our candidates can assimilate this training to the best advantage, which will allow them to rank with the other specialists in the field of the pediatrist, they must have a real, firm foundation in science and medicine, the more of it the better. The trouble with some of the specialists of today is not with their special training but in that of the fundamentals. We don't want men of narrow vision in orthodontia,—they must be broad. This can come only from familiarity with medicine in its broadest sense. We could go deeper than that and say, it is something in the men themselves that makes for study and a successful practice. Study, research, and practice go hand in hand.

Oh, that we could draft a company of brilliant young minds, studious youths of high ideals, with vision and ambition for real adequate training in orthodontia! Such a company would hold the ground gained for our beloved specialty by our pioneers and carry on to the new heights toward which we are all striving. These men are, I hope, now in the schools working with their teachers, and to them belongs our future.

Dr. Burt Abell, Toledo, Ohio.—It seems to me Dr. Eby's paper is epoch making. The only reason it will not be is our failure to comprehend it or our dalliance in following it up with definite action as a society. We have in this paper something concrete and constructive.

It will be to our shame if we do not see to it that the bigness of the man shall be reflected and glorified in our action as a society.

When I read the copy sent to me, my first impression was, what a wonderful paper to present at the Congress next year when *all* the assembled Orthodontists of the world could hear and unite in the Program, but, on further thought, I see *now* is just the time for it. We need to read it over again and again in order to get its main points. Some will be able to suggest clarifying details and it is most fitting that the American Society of Orthodontists take the initiative.

That we may not forget what has been presented, it seems to me that a reprint should be sent as soon as possible to every member with the request to read it once a week and record impressions and report to the Board of Censors. This is necessary as our present plan of commercialized printing of our proceedings often makes us wait nearly two years before we have an opportunity to carefully read an article which has been presented to us, at our own meetings. We are at the mercy of the caprice of some journal that possibly might not enter into the spirit of the matter and we lose the thrill of it by that time. We want to go to New York alive to the situation and each one in a cooperative mood.

Dr. Joseph D. Eby (*closing*).—With reference to paragraph two, and for the information of the members who did not attend the meeting, as well as a reminder to those who were present, attention is called to the fact that this paper was scheduled to be read at 10 A.M. Owing to the fact that all regard for time was abandoned, and due to the great length of the preceding program of the morning this paper was not called until 12:15 P.M.

In justice to this situation it must be stated that the sole object of this paper was an effort to evoke a most thorough, heartfelt and serious consideration of what to me is infinitely the most important subject confronting orthodontists today. It is with a great deal of regret that the request was not made that this paper should have been deferred to another period, but in the spirit of general interest it was read: whereupon a resolution was passed that it should be discussed by title only, due to the lateness of the hour.

The writer realizes that the entire spirit and intent of the paper was lost in the very presence of those listeners whose opinions and thoughts it had been written for. With the spirit of the occasion thus broken there remains no incentive to elaborate further on this subject at the present time, excepting to express my deep appreciation to those whose discussions may appear herewith, and to urge every reader to regard the thoughts expressed in them very seriously.

Without entering into detail, allow me to again reiterate the fact, in spite of other opinions, that standardization in any teaching is essential, that it has long since resulted and is continuing to be improved in all forms of education with the possible exception of dentistry and a few other limited sciences. Just as impossible as is individual instruction in any great science, equally essentially should the basic principles of all collective instruction be given in but one way, by standardization.

At present it remains for those of you who are engaged in instruction, whether undergraduate or postgraduate, to consult your consciences as to the adequacy of that knowledge you are assuming the tremendous responsibility of imparting to others. It is still my belief that it is the duty of this organization as the parent body of organized orthodontia in America and especially under existing conditions, to offer its assistance to those who are at present producing the orthodontists of tomorrow.

DEPARTMENT OF

ORAL SURGERY, ORAL PATHOLOGY AND SURGICAL ORTHODONTIA

Under Editorial Supervision of

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A REPORT OF A CASE OF CARCINOMA OF THE MOUTH INVOLVING THE CHEEK AND GUM OF THE MANDIBLE ON THE LEFT SIDE COMPLICATED BY A CELLULITIS*

By Edward Whynman, A.B., D.D.S.

Instructor, Department of Oral Surgery

THE patient (male) came to our clinic on March 1, 1926, complaining of a swelling of the left side of his jaw. He is a laborer, fifty-five years of age, is married, and has one child. He has had trouble with his mouth for the past twenty years but had never consulted a dentist within that time. Every now and then a swelling would appear on the lower left side of his jaw. The condition would subside with apparently little discomfort only to return again within a period of months, accompanied by some pain.

The condition, however, became severe during the Christmas of 1925, and it was not until February 15, 1926, that the patient consulted a dentist. The dentist "bled" the swelling (apparently attempting to obtain drainage) three or four times for about ten or twelve days without obtaining any results. As a last resort the dentist advised the removal of a root in the affected region. This was done under local anesthesia by infiltration, and the patient visited the dentist's office three or four times for postoperative care in the form of washing.

On March 1, 1926, the patient presented himself to the oral surgery clinic with the following symptoms:

1. *Extraoral:*

(a) A large swelling of the left side of his face involving the mandible, extending from about the mandibular left canine to the angle of the mandible.

*New York Polyclinic Medical School and Hospital.

(b) There was a large reddened fluctuating area about the lower border of the mandible in a line with the left mandibular premolar. The submaxillary and cervical lymph nodes on the left side were enlarged and palpable. Trismus was present.

2. *Intraoral:*

(a) The mouth was very unclean and fetid.

(b) The anterior teeth, both maxillary and mandibular, were irregular, sharp, and full of calcareous deposits.

(c) The patient had never used a toothbrush.

(d) On the affected side the mandibular canine, premolars, and molars were absent.

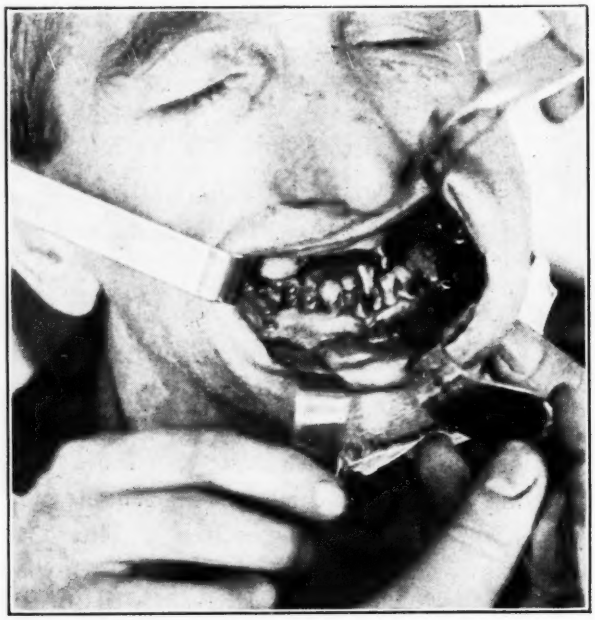

Fig. 1.—Carcinoma of the mouth caused by lack of dental care.

(e) On the maxillary left side, all of the teeth were missing with the exception of a brokendown root in the premolar area and an elongated maxillary left third molar, which, when the jaws were closed, was buried in the neoplastic mass about one-fourth of an inch.

(f) The neoplasm extended from about the left first premolar to the mandibular left third molar anteroposteriorly, involving the gum overlying the left mandible, and the cheek buccolingually.

(g) The mass was irregular, ulcerating, indurated and hemorrhagic.

The patient complained of little pain, was weakened, looked emaciated, and had lost about fifteen pounds within the past two months. He was a heavy smoker and denied syphilis.

A diagnosis of carcinoma was made clinically for the following reasons (a biopsy was thought inadvisable): (1) The character of the neoplasm. (2) Continuous growth and induration. (3) Loss of weight, weakness, sleep-

lessness and emaciation. (4) Lymphatic involvement. (5) The presence of sufficient irritating factors, viz., elongated maxillary left third molar, uncleanliness, smoking, and brokendown roots. (6) The persistence of the neoplasm despite remedial measures. (7) The age of the patient.

The infection which supervened was in my opinion secondary and was produced by the opening up of a new avenue of infection by the removal of the brokendown root under local anesthesia by infiltration giving rise to a subperiosteal abscess and a cellulitis of the left side of the face.

The treatment consisted in the establishment of drainage for the suppurative condition by an extraoral incision at the fluctuating point. The case was then referred to the general surgical department for further treatment.

In this brief report of the case I will only mention that malignancy of neoplasms of the oral cavity are easily prevented when detected early. As a matter of fact, any lesion or induration of the oral mucous membrane should be regarded with grave suspicion when it does not respond to ordinary treatment.

The special point of interest of this case is the mistaken diagnosis of an alveolar abscess for one of an active malignancy, with the consequent baneful results of unnecessary meddling.

DEPARTMENT OF
DENTAL AND ORAL RADIOGRAPHY

Edited By
Clarence O. Simpson, M.D., D.D.S., F.A.C.D.,
and Howard R. Raper, D.D.S., F.A.C.D.

X-RAY PATHOLOGY: ITS SIGNIFICANCE IN REFERENCE TO THE DENTAL FILM

By William A. Lurie, M.D., New Orleans, La.

SINCE the advent of the roentgen ray as a means of picturing the deeper portions of the human body, rapid progress has been made in the picturing of all parts. In this branch of scientific progress, dentistry has not lagged. From the early days of Dr. E. C. Kells' twelve-minute exposure to portray a tooth, to the present day two-second exposure, and from the poorly made packets of the early days to the present perfected packet and holder, as designed by Dr. Howard Raper, there have been many notable steps in progress. Great advances have been made in the standardization of a technic to perfect picture taking. These advances are in the mechanical field of an electroscientific nature. Such a stage of perfection or standardization has been developed, that more attention should be directed to the scientific, and medical aspect of what pathology is found associated with groups of conditions. There is no desire to say that papers have not been written, and much work touching on this subject has not been undertaken, but in this part of the field there has been a lack of standardization.

The proof of any scientific statement, when it concerns the subject of pathology, is difficult. Many factors upon which medical science is not clear have a bearing upon the pathology and its relation to symptoms in the living subject. The train of symptoms that patients may describe or lesions that may be held to account for symptoms, may not agree with the pathologic findings. With the dental x-ray film, however, there may be a possibility of the arriving at a more rapid and scientific conclusion, placing the burden of proof upon our old and tested scientific teachings of histology, pathology and chemistry. If a pathologic assumption or a deduction can be based upon proof substantiated by these time-tested sciences, then it is not so likely to be questioned and is, perhaps, approaching a correct solution of the problem.

The dental x-ray picture, variously termed the dental roentgenogram, dental radiogram, and by the author the penetogram,[1] is an accurate por-

trayal of the dental areas. The perfection of the resultant shadow picture has nothing to do with the x-rays. That latter is a matter of mechanical technic. The penetration of the rays is always the same and always correct and an absolute registration, so that the picture is a true representation in shadow of the parts penetrated. A variation in the direction of ray penetration, the technic of the placing of the film or the altering of the time of exposure will change certain details, yet a definite pathologic condition will always register the same under similar conditions.[2]

The significance of the findings is not alone a matter of mechanical detail but is a highly scientific problem of their proper reading. The interpretation of the x-ray picture, and particularly that of the dental areas, calls into play the most acute medical knowledge, particularly along the lines of pathology, histology and chemistry, as it is related to the jaws and teeth. In certain tissues only a limited variation of pathology is possible unless a change or disorganization takes place. It cannot be denied that disorganization of tissue alters the arrangement of its component elements. In their proper arrangement they represent the normal. We learn to recognize one arrangement and ratio of elements as normal and another as abnormal. Each arrangement is picturable and differences recognizable.

There are certain fundamental factors which bear upon the entire conception of this subject which it might be well to recount briefly. The reason for certain results, the histologic construction of the area, particularly as it influences the ray penetration, the gradation of shadows, their value and their pathologic significance, must all be understood to qualify one in the making of a correct diagnosis.

In the *Dental Summary* during the year 1922 under the title of "Penetology" there were detailed the reasons for the appearance of shadows and the changes in shadow outline which the alteration of the direction of light force occasions. To register such variations there must be some force which governs the actinic activity. Calling to our aid our knowledge of anatomy and histology to decipher the intimate construction of parts more accurately we find that tissues vary, and that parts of the jaw vary consistently. That is to say that teeth anatomically are of different shapes and sizes; there is, however, a variation of size and shape which is consistent with the appearance of any of the teeth, within which they can be considered as normal. There is also a certain latitude of alteration of the pulp chamber and root canal which is within a normal range. The histologic aspect of a tooth under normal conditions does not permit of so wide a difference, neither does the chemistry nor the chemical arrangement of its elements. There is less latitude for anatomic variation possible in the peridental membrane to be considered within normal bounds. Its histologic and chemical alterations are also more restricted. The alveolar process or cancellous bone has a distinct place anatomically and in its position relative to other anatomic structures, such as the teeth, denser or compact bone and canals, foramina and sinuses, must be within comparatively restricted limits to be considered a normal variation. Histologically the cancellous bone is a definite arrangement of soft tissue and bone structure,

so that the latter forms the walls of cells, and while the former, the matter within them. This arrangement, then, is fairly constant histologically. Chemical variation of bone is possible within normal limits, yet the chemistry of bone and of soft tissue is fairly constant in its relation of animal matter to its inorganic salt content.[3]

Shadows by means of x-rays are a registration of the penetration of light force made perceptible by silver salt reduction. In other words, a certain amount of force can be evaluated from the silver reduction on the film. The amount of silver salt reduction on the film can be graded. Its intensity is measurable. So distinct are the shadows and so characteristic, as they appear on the dental film, that they can be differentiated as to the shadow picture of one or another anatomic structure. Thus in the dental film where a true delineation of structure is possible, two grades of tissue can be differentiated: Grade I as soft tissue or animal matter which has many normal anatomic positions and limitations, while Grade II is bone. This also has certain normal limits. Bony tissue is of two varieties: Cancellous, which has a portarayable structural formation, can be considered Grade II-a, while denser or compact bone areas which do not show a picturable histologic formation, but are of definite anatomic shape, such as teeth, or of specific anatomic position, such as the walls of sinuses, or are anatomic promontories, such as ridges or spines of bone, can be taken to represent Grade II-b. There is a distinct chemical difference in the tissues represented by Grade I and Grade II. In a series of carefully made x-ray pictures it is possible to determine beyond doubt which shadows locate soft or purely animal tissue and which represent bone. What is true of shadow or silhouette formation is true of x-ray shadow formation. They are influenced by the direction of light force. X-ray shadows are further influenced by the elemental composition of the area being penetrated by the rays. Even the arrangement of the elements and their proportions influence x-ray penetration. The arrangement of elements and their proportion identifies an area as normal or pathologic, as well as it indicates the grade of shadow and tissue present. The assay of inorganic matter in animal tissue is about 0.88, whereas in bone, it is approximately 68.4. Coincidentally, that shadow on the dental film representing a bone area has an opacity or silver salt reduction of approximately 35 per cent, using each film as a standard. The area that represents soft tissue has an opacity and silver salt reduction of approximately 93 per cent. Converting these percentages into actinic force registration, we find that bone areas register 35 per cent of force and soft tissue 93 per cent. For bone, there has been a resistance of 65 per cent, and for soft tissue a resistance of 7 per cent. This is in keeping with the chemical analysis of inorganic matter in these two grades of tissue. It is safe to assume that that resistance, therefore, is governed by the inorganic salt content of an area. This is further substantiated when we consider the appearance of the filling materials used about the oral cavity. The great majority of these are represented by areas of but little silver salt reduction, and of little or no film opacity. These shadows on the dental film may be considered as a third grade, therefore

Grade III. The substances graded as third class of shadow on a dental x-ray film have a high resistance value because of their high atomic weight and great density. They are of metallic composition and have no animal matter or structural formation.

Attempting to place a value on shadows has been variously attempted. The evaluation as the representation of the inorganic salt content for the area is a simple and an accurate means of such estimation. Opacity as an index of penetration is in inverse ratio to the salt content of the area pictured. Thus an area with a low inorganic salt content will have a high coefficient of penetration and a low coefficient of resistance. Bone with more inorganic salt content has a higher resistance, and registers less penetration.

In the making of the application of these findings the following may be considered axiomatic. *Anatomic shadows have a definite value and exact position. The study from a pathologic aspect of a condition is the determination of its normal or abnormal relation to the other shadows of fixed parts pictured. This is picturable in direct ratio to its inorganic salt content variation.*

In its formation, alveolar bone may be considered a fixed anatomic ratio of bony and soft tissue. In the picturing of Grade II-a shadow we find this to be true. A definite area of soft tissue (Grade I) shadow is surrounded by bone (Grade II) shadow density, of specific arrangement and thickness. It is apparent that to be normal this ratio of shadows, as a picture of such an area, must bear a relation to the anatomic ratio and value of the tissue. This is also true of the chemical contents of tissue, and their possible portrayal.

To outline all the possibilities of changes and their pathologic significance would require a detailing of every condition which is possible in the jaws. This would include the chemical differentiation of vital and non-vital pulps, which is a picturable condition through noting a difference in shadow value. The difference between acute and chronic processes, is expressable as a difference in inorganic salt ratio. Considering picturing from an histologic point of view, the alteration in the shadow of the peridental membrane and its replacing what should have the value of bone density, or alveolar shadow, is a typical instance. The loss of structural formation, or the ratio of Grade I to Grade II shadows, in the making of what should be alveolar shadow (Grade II-a) is an histologic picturing. A periapical alveolar abscess, therefore, is an increase in ratio of soft tissue shadow in its relation to the area in general and to the bony walls of the Haversian system, which make the alveolar shadow.

Considering any pathologic condition about the jaws and even fillings and dentures the analysis can be made in a similar manner so that perfection is determinable and imperfection recognizable through learning if the shadows picture a normal ratio of value and position for what they represent.

Now for a grossly anatomic consideration of the subject. Pressure is a factor in the causation of symptoms. Pressure is the result of a thickening of a tissue, and when such thickening is in the area of some important nerve trunks or blood vessels it becomes a factor in symptomatology. Nerves and

vessels we know follow canals or channels in the bony parts. Thickening is sclerosis. Sclerosis is the result of a chemical change and is an increase in the inorganic element over the normal ratio for the area. A thickening therefore is picturable as an increase of resistance due to the accumulation or deposit of inorganic salts. Therefore, if such thickening is pictured in the vicinity of a vitally important area, its clinical possibility must be considered.

Consider two conditions as the expression of a variation in inorganic salt content in bone tissue and their effect on the x-ray picturing of cancellous or alveolar bone, such as osteomalacia and osteosclerosis. In one the bone "softens," in the other it "hardens." In the first instance it will be found that more soft tissue shadow is pictured, more Grade I value to the area, with a thinning or lessening of Grade II; while in the latter instance Grade I shadow is diminished and Grade II shadows, as represented in the walls of the Haversian system, are thickened over the normal ratio. The chemical content represented by the inorganic salts is the governing factor which influences x-ray resistance. The arrangement or histologic ratio of soft and bony tissue pictured to represent normal alveolar tissue is fixed, and the normal can be pictured. The picturing of a pathologic process is in the detection of the decrease or the increase of inorganic salts, which is picturable.

Concluding, therefore, the proper determination of a pathologic condition, as pictured on the dental film, is not the interpretation of a gross lesion or finding, but the discovery of the histologic alteration and the chemical change which is pictured and which bears a direct ratio to x-ray penetrability as well as to the general pathology. X-ray shadow changes are in definite grades, which represent tissue. Any alteration from normal to a pathologic process is pictured as a disarrangement of the normal element content of tissue and shadow grade. The change in tissue salt content ratio is portrayable. Symptoms can be explained through the placing of a value on shadows and the explanation of pathologic changes in terms which describe both histologic and chemical changes.

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ABSTRACT OF CURRENT LITERATURE

Covering Such Subjects as

ORTHODONTIA — ORAL SURGERY — SURGICAL ORTHODONTIA — DENTAL RADIOGRAPHY

It is the purpose of this JOURNAL to review so far as possible the most important literature as it appears in English and Foreign periodicals and to present it in abstract form. Authors are requested to send abstracts or reprints of their papers to the publishers.

Vincent's Infection of the Mouth and Pyorrhea. I. S. Miller (New York). The Dental Digest, April, 1926, xxxii, 4.

The author calls attention especially to the differentiation of these two affections. The subacute form of Vincent's stomatitis is the one which may simulate pyorrhea as it is essentially a gingivitis. It is much more apt to occur in young people with badly kept mouths, while pyorrhea tends to occur after the age of twenty. In some cases the teeth are not loose and there may be no recession of the gums. Bleeding occurs only upon brushing the teeth, while in Vincent's infection bleeding occurs under a variety of conditions. The acute form is easily excluded from pyorrhea by the fever, the bad odor of the mouth, the line of demarcation and gangrenous tissue, the swelling of the sublingual glands, etc. If there is any doubt in diagnosis between pyorrhea and the subacute type of Vincent, the microscope and roentgen shadow will clear up the difficulty, for the presence of Vincent's organisms on the one hand and of absorption of bone on the other will decide in favor of one or the other. Of interest is the great difference in the management, for in Vincent's infection the microorganisms are directly attacked by solutions of sodium perboral or local salvarsan, or both, and hardly any other treatment is necessary save absolute cleanliness, for Vincent's organisms feed on decaying matter. In pyorrhea we first correct the faulty occlusion this being also the keystone of the treatment. Other measures comprise stimulation of the gums by the toothbrush. Exceptionally it will be necessary to operate on a gum pocket by the flap or open method.

Sensitive Dentine. E. M. Sherman (Philadelphia—Evans School of Dentistry). The Penn Dental Journal, May, 1926, xxviii, 4.

The author in addition to a study of the published claims of the innervationists and noninnervationists has personally interviewed authorities like Hopewell-Smith, Hermann Prinz, and others, in order to bring out evidence by cross-examination. Hopewell-Smith states that the term *sensitive dentin* is a misnomer and that not the dentin but the pulp is sensitive. Dentin

having no nerves cannot be sensitive. If dentin were really sensitive, as is alleged by the innervationists, it would be the most sensitive structure in the body. Prinz agrees in part with the preceding but adds that the dentin in these cases is pathologically altered although the state of irritation or irritability is in the pulp. The irritating agencies, however, are externally applied—directly upon the dentin. Physiologically normal dentin never gives rise to irritation of the pulp, although it can transmit normal sensations. Hopewell-Smith calls attention to the insensitiveness of dentin in certain cases of caries, in which there is no pain and to the impossibility of ordinary dentistry if the dentin were actually sensitive—ordinary filling would then be extremely painful. Cocaine does not affect the sensations of sound dentin if applied without pressure although when applied with pressure an anesthetic action is manifested. In diseased dentin the factors which cause sensitiveness and pain are changes in surface tension, in osmotic pressure, thermal changes, wedging of food in the interspaces, etc. According to Prinz, in hypersensitive dentin the contents of the dentin tubules are pathologically altered through physicochemical influences which interfere with surface tension, imbibition and diffusion.

A Critical Review of Dr. Weston A. Price's Recent Essay. J. A. Pollia (Los Angeles). Dental Items of Interest, May, 1926, xlviii, 5.

The author's own conclusions at the close of his article are in part as follows: Despite the large amount of evidence adduced by Dr. Price the author believes that the rôle of diseased teeth in systemic pathology is overstressed, not more than 4 per cent of systemic disease being favorably influenced by removal of the teeth. Price's radiographic conclusions are not in full accord with those of competent men, for rarefaction is not an index of infection, neither is hyperplasia. Infected teeth, pulpless or otherwise, which show normal x-ray findings are very rare. Results of animal experiment cannot unreservedly be applied to the human clinic. The pulpless tooth may itself represent a secondary infection. The use of such terms as rheumatism, arthritis, rheumatic group, etc., is confusing. The term dental infection is misleading, for there are no less than fourteen other structures in the body which may be responsible for focal infection in a given case, all of which would have to be excluded if we are to make the teeth responsible. In conclusion the author doubts that his critique will do any good, for he thinks the dentists are already prejudiced in favor of Dr. Price's views. He congratulates his adversary upon his good work in influencing capitalists to look after the dental health of the working man.

Apical Infection with Living Pulps. L. R. Cahn (New York). Dental Items of Interest, April, 1926, xlviii, 4.

In this brief article the author gives three case histories. The conclusions reached are in part as follows: The majority of apical granulomas are due to infection carried to the apex via the root canal. While the general belief is that this transmission can occur only in pulpless teeth, or those

having dead pulps, cases like those published here show that exceptions may occur. Infection is present yet the tooth responds to every test for vitality. The path of infection here is through the living pulp to the apical pericementum, giving rise to a granuloma. In Case I the lower right second molar is shown in the radiograph as having a radiolucent area at the apex of each root. The tooth was shown to be alive. Patient suffered from furunculosis of the ears and all other foci for infection could be excluded. After extraction the tooth was cracked open and the pulp dissected out but the author having neglected to decalcify the tooth could not make sections for the microscope. There was no lateral involvement of the pericemental tissues, so that the author assumes that there must have been infection of the pulp propagated to the apex. In Case II, the tooth, a lower right first molar, was alive and without lateral pockets. There was a large amalgam filling. Sections showed that although alive the pulp showed extensive signs of degeneration —atrophy with shrinkage of pulp from the pulp chamber. There was a deposit of secondary dentin. In Case III the tooth was a bicuspid and the seat of an amalgam filling. The pulp had undergone secondary fibrotic change although the tooth was still alive.

Root Canal Broaches in the Lungs. Jackson, Tucker and Clerf (Philadelphia). The Dental Cosmos, May, 1926, lxviii, 5.

Chevalier Jackson, during the past eleven years, has seen eight of these cases and possesses roentgenograms of all, while he gives photographs of seven removed broaches, in which the method was his peroral bronchoscopy. The dentist is usually working on a molar root when the accident happens and the patient probably jumps from the pain, causing the dentist to lose his hold, which is a two finger grip. There was no case of the broach itself breaking or coming apart, which is almost always the case with dental or surgical instruments when aspirated into the bronchi. There are no symptoms at the time but eventually we note those due to suppuration in the lung—cough, purulent sputa and emaciation. The chance of a broach being coughed up should be 1 in 50 or 1 in 100, while, when removed with the bronchoscope, there should be 100 per cent of successes. The only prophylaxis to suggest is a safety tether on the handle of the broach. After such an accident is suspected, the dentist cannot be held responsible for the mere accident but must at once have an x-ray made; otherwise he may be accused of neglect. If the patient refuse, the responsibility passes to him. The plates should show the whereabouts of the broach, as esophagus, intestine, bronchus, and the dentist then calls in a physician. If passing along the bowel, the broach should be let alone but if in the esophagus or tracheobronchial tree a bronchoscopist should find it very easy to remove it at once.

Pressure Anesthesia in Pulp Removal. Editorial in Dental Items of Interest, November, 1924, xlvi, 11.

The editor calls attention to the theoretical danger in this form of anesthesia of forcing septic matter into the root canal and adds that proofs of such a sequence are thus far lacking. There is a probable fallacy in the

misuse of the word "pressure." If there is a break in the blood vessels in applying the cocaine and if pressure is actually used, such a possibility may indeed be thought of, but a critical analysis is unable to show how pressure can function in causing sepsis. Surely if infection be threatened at all it would not be necessary for pressure to cooperate, for this could occur by ordinary osmosis or capillary suction.

The editor quotes a recent writer who recognizes this possible danger and would avert it by the previous use of antiseptics in the pulp cavity. It is well enough to make use of this step on general principles but in the total absence of evidence it is going too far to assert that such preliminary treatment prevents infection in a routine manner. It may be true that infection has been seen when this step has been omitted but there is no proof adducible of cause and effect. Infection may have preexisted. The arguments of the men who distrust pressure anesthesia, *per se*, or in the absence of previous antiseptic treatment of the pulp cavity, seem to rest largely on the erroneous interpretation of radiograms purporting to show the presence or absence of periapical infection following pressure anesthesia.

Treatment of Hyperviscid Saliva. M. J. Eisenberg (Roxbury, Mass.). The American Dental Surgeon, June, 1926, xlvi, 6.

The affection known as sticky mouth is due to excess of mucin in the saliva. There is no reference here to transitory stickiness but only to a permanent condition. The reaction plays no rôle, for it may be acid or alkaline and often may react differently at different times. It is best to test the viscosity with a viscosimeter, and the author uses for this purpose the apparatus of H. C. Smith as modified by himself. One c.c. of distilled water should pass through the opening in 20 seconds while saliva may require 70 seconds, which would make the viscosity of that specimen 50. For further information the reader is referred to Smith's *Chemistry for Dental Students*. The cause of hyperviscid saliva is not understood and we only know that it is seen especially in the pregnant, in neurotic subjects and in high protein feeders. It leads to retention of food débris in the interstices of the teeth. Incidentally it causes surface disintegration of silicate fillings. It is believed to be a factor in erosion, in sensitive dentin and in the loss of tissue tone in so-called neglected mouth. There is no doubt of its active rôle in furnishing a culture bed for leptothrix and other buccal organisms and in the production of salivary calculus. The treatment should in theory be simple. Acids antagonize mucin formation and acid fruits and mouth washes should be and are of value. The best solvent of mucin is acetic acid which should be used as follows: two drachms of 5 or 10 per cent strength in four ounces of aqua rosae should be the stock solution. Two teaspoonfuls of this should be added to half a glass of water as a mouth wash for use after meals and at bedtime. If this be used continuously for four weeks the mouth and saliva should be found to be normal.

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EDITORIALS

Subscribing Members to the First International Orthodontic Congress

BY FAR the most important activity in the orthodontic profession at the present time is the completion of the plans for the First International Orthodontic Congress to be held in New York City, August 16 to 20, 1926.

In the last issue of the *International Journal of Orthodontia, Oral Surgery and Radiography* there was a brief outline of the development of orthodontics up to the organization of the First International Orthodontic Congress. We stated at that time that all the orthodontic societies in America had become component parts of the Congress with the exception of the Pacific Coast Society of Orthodontia. Since the above-mentioned editorial was written, the Pacific Coast Society has joined the Congress. We are pleased to say that the Great Lakes Society of Orthodontists and the Deutsche und Oesterreichische Gesellschaft für Kieferorthopadie, have also joined the Congress.

The program has been practically completed, as was published in the May issue of the International Journal of Orthodontia, and in practically all the other dental journals in America. In this issue of the Journal will be found a complete list of the clinics, and case reports which have been arranged by the Program Committee. In addition to the above-mentioned material, the Program Committee has arranged for a very interesting exhibit. We have been privileged to see some of the advanced exhibits as they are being prepared and believe this scientific exhibit will be one of the most valuable parts of the Congress.

We want to call attention to the fact that the Board of Directors has made it possible for every man to become a Subscribing Member of the International Congress. Subscribing Members will have the privilege of attending all the scientific meetings, clinics and exhibits and will receive a bound volume of the "Proceedings of the Congress."

We also wish to urge the members of the various orthodontic societies to inform their dental friends of the opportunity of becoming a *Subcribing Member* to the Congress. Dr. Fisher has suggested that every orthodontist should have at least four dental friends who would be glad to avail themselves of the opportunity of attending the meeting of the Congress and of receiving a bound volume containing papers, clinics, case reports and scientific exhibits, as presented. We believe it is the duty of each orthodontist to do everything he can to educate the members of the dental profession as to the importance of orthodontics and in regard to the recent developments of the science. This education of the dental profession can be accomplished in no better way than by the *orthodontist* informing the *dentist* that he should become a *Subscribing Member of the Congress.*

We hope every orthodontist will do what he can to secure Subscribing Members, as outlined by Dr. Fisher, to make the Congress a success.

The Technic of Oral Radiography*

Those who have seen x-ray negatives made by Dr. C. O. Simpson know they are beautiful—nothing short of it. How does he make them? He tells you in his new book *The Technic of Oral Radiography*—he tells exactly. If you want to make negatives like Simpson's all you need to do is to do what he tells you in his book. But, alas, here is the catch: It is necessary to work and work very hard to produce negatives like Simpson's. Simpson himself has to work hard. There is no "secret," no easy way. But there is much information to be acquired. This is all to be found in the Simpson book, presented with splendid clarity and brevity.

I say brevity and that is true, but there are two hundred pages. Two hundred pages and brief! Exactly so, for the plain truth is that there is vastly more to the science and art of making dental radiographs than is dreamed of by the average person who makes them. This book, I believe, will do a very great deal toward winning a place of dignity and respect for

*The Technic of Oral Radiography. By C. O. Simpson, Illustrated. The C. V. Mosby Company, St. Louis, Mo., 1926.

radiodontia—and heaven knows this is needed. I have a hope, and I dare say the author has the same hope, that men will read this book and say, "Why there is more to this thing of making dental radiographs than I had thought." Certainly the fact is that there is more to making dental radiographs than the ordinary operator thinks.

My own personal reaction is a feeling of gratitude to Simpson for such a book; having it to refer to is no small privilege and help. It is sound, substantial, based upon definite knowledge and achievement. All men who want to do good radiodontic work will appreciate it and find it of the utmost value. What will be the reaction of those who do bad work and are satisfied with it? I doubt if they will like it, or find anything in it for them. My hope—and again I suppose it is the author's also—is that they will dislike it; that it will disturb them, make them unhappy.

The science and art of radiodontia as it exists clinically today is a rather sorry mess. It is better than it was a few years ago, but it still has a long way to go. This book of Simpson's will do a lot for this Cinderella (before the dance) specialty of dentistry.

There is no use trying to discuss this book in detail. Such a discussion would soon exceed the space limits of a review. But certain matters may be mentioned briefly. It is pleasing to this reviewer that an author of the high intelligence of Simpson does not use the insincere, silly and ridiculous Roentgen words.

It is noteworthy that Simpson recommends mathematical measurement of the vertical, or, as he calls it, the "vertico-horizontal," angle. Radiodontic results will never be what they should be until this practice is adopted. That a man of Simpson's unquestioned ability measures his vertical angle, should give some pause to those general dental practitioners and general radiographers who say they do not find it necessary. There is only one reason why a man does not find it necessary to measure his vertical angle. That reason is because he is satisfied with results which—well, which would not satisfy Simpson, to put it mildly. Simpson's records of vertical angles are voluminous, extending over many years. They constitute a very real and valuable contribution to radiodontic knowledge.

One of the best chapters in this book of many good chapters is Chapter IV, "Intraoral Regions in Detail." Here is detailed and accurate information, given briefly and well illustrated. Is the profession ready for it? Is the profession too lazy to take it, or too unappreciative of quality to be interested in it? I do not know.

Another excellent chapter is the next to the last one in the book, Chapter IX, "Photographic Processes." The writer knows and he tells—and that's that.

The full meaning of some sentences is not at once apparent; one sometimes finds it necessary to read them over a second time. This is not due to ambiguity, but to the fact that they are frequently packed so full of meaning. The writer has a talent for exact expression: he says exactly what he means. That's the best any writer can do.

On page 60 I find, "Although many filmholders have been designed for intraoral use, except in the mandibular molar regions, none accomplishes the purpose better than digital retention." Quite true, providing one has the skill to use digital retention in such manner that the film is held as well as in a holder. I do not hesitate to admit that digital retention as practiced by Dr. Simpson is better than any other, but retention by means of filmholders is better than digital retention as ordinarily practiced. Simpson describes and illustrates exactly his method of digital retention.

The author points out discrepancies in certain cases between the occlusal plane and the facial landmarks—ala to tragus line—which represents this plane. It is not to be denied that such discrepancies do occur. The facial landmark lines represent the occlusal plan only in a general way. In passing, it might be mentioned that the occlusal plane method of determining head position does not take into account tipping of the teeth to the facial or lingual.

Simpson seems to have a talent of no mean order for selecting the wrong kind of an electric pulp testing machine. First he used a high-frequency machine, now another, better than the high-frequency coil, but I doubt if as good as an ordinary Faradic machine.

I have written books myself, and written them with sincerity. It is for this reason, perhaps, that a book makes me feel a little sad. A book, conscientiously written, represents an amount of labor that one who has not written one can never believe. It somehow takes something out of you, makes you very very tired, and you are never as young again. Back of this book of Simpson's I see the great expenditure of energy necessary to its production, and I say to the author: "It was worth it."

This fellow Simpson has in the past, so I hear, paid me the great compliment of professing to be a student of mine. He is no more a student of mine than I am one of his.

The book is dedicated: "To Doctor C. Edmund Kells, the first Radiodontist and a martyr to the development of Radiodontia," an appropriate, timely and altogether fitting dedication. —*H. R. R.*

Chronic Infections of the Jaws*

This book is written by Stanley Colyer, M.D. (Lond.), M.R.C.P., D.M.R.E., Radiologist, Mildmay Mission Hospital, of London. Included with it is a synopsis of a series of fifty illustrated cases by Reginald Curnock, L.R.C.P., M.R.C.S., L.D.S., Dental Surgeon to the Mildmay Mission Hospital.

The first chapter is devoted to normal details observed in dental radiograms. This is a good departure, for many works on radiography begin the study by considering the abnormal. The knowledge of normal histology and anatomic structure is a vital necessity.

Chapter 3 considers radiographic changes in chronic infections of the

*Chronic Infections of the Jaws. By Stanley Colyer, M.D., (Lond.), M.R.C.P., D.M.R.E. Macmillan Company, 1926.

jaws. In this chapter are shown a number of conditions encountered in dental practice.

Chapter 4 deals with sources and predisposing causes of chronic jaw infections. Under the heading of *Surface Infections* the writers consider "The Forcible Regulation of the Teeth of Children." The following quotation from the book indicates the author's view.

"In one case only which I can call to mind was there no demonstrable change; in all others there was clear radiographic evidence of varying degrees of damage. In the worst form there is absorption of the apices of some or all the teeth regulated, together with a general infection of the supporting tissues." From the above quotation we would be led to believe that the authors are of the opinion that orthodontic treatment in the majority of cases is accompanied by serious infections of the jaws. In reference to absorption of the roots they fail to state whether the roots of the permanent teeth were absorbed or whether they were speaking of the deciduous teeth. We have long recognized the fact that an excessive force in the correction of malocclusion, especially with certain types of appliances, would produce root absorption. We have yet, however, to see a case treated along proper lines, regardless of how bad the technic, that has shown an infection as a result of orthodontic treatment. Radiographs made during orthodontic pressure will often show rarification around the teeth but this is not the result of infection and is a physiologic change.

It is our belief that the writers have been examining cases that were poorly treated or have been misinterpreting their films, because we are led to believe that they are of the opinion that orthodontic treatment produces a large amount of chronic infection. They also write as follows: "I am quite certain of my evidence when I say that the forcible regulation of children's teeth may lead to most disastrous consequences, and from a radiologist's point of view I unhesitatingly condemn the method." Of course it may be possible in speaking of forcible regulation that they are referring to the appliance we have long condemned in America.

The book is very well written although a terminology could have been employed which would have been more in keeping with the development of dentistry, for example, the writers insist upon using the terms *upper* and *lower* for *maxillary* and *mandibular,* as we use them in this country. The book is well written and is the best we have seen on the chronic infections of the jaw from a radiographic standpoint.

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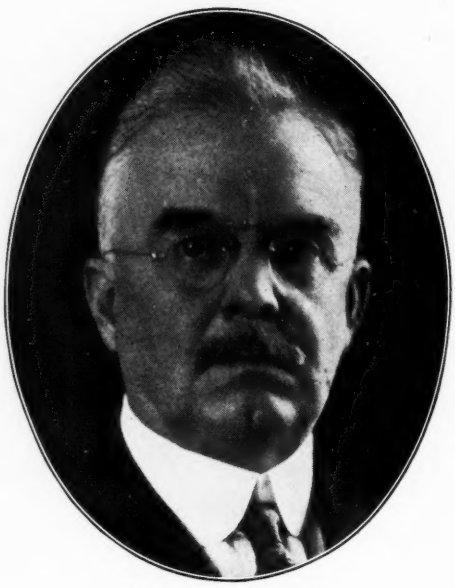

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ORTHODONTIC NEWS AND NOTES

The First International Orthodontic Congress

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New York, N. Y., U. S. A.

August 16, 17, 18, 19, and 20, 1926

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Eastern Association of Graduates of the Angle School of Orthodontia.
Alumni Society of the International School of Orthodontia.
Alumni Society of the Dewey School of Orthodontia.
European Orthodontological Society.
British Society for the Study of Orthodontics.
Societe Francaise d'Orthopedie Dento-Faciale.
Deutsche Gesellschaft für Zahnarztliche Orthopaedie.
Deutsche und Oesterreichische Gesellschaft für Kieferorthopadie.

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Secretary—Walter H. Ellis, Buffalo, N. Y.
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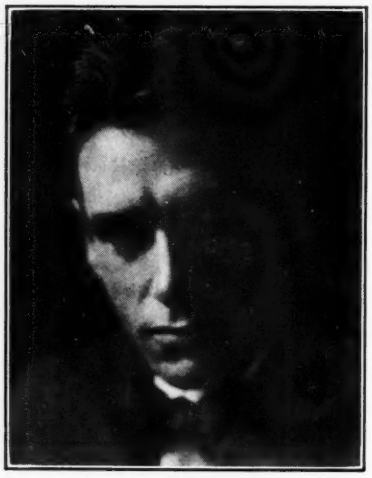
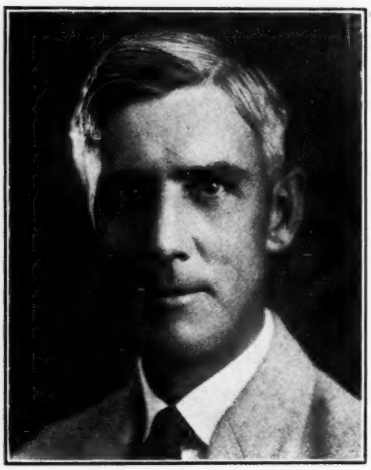
FRANK M. CASTO
Cleveland, Ohio
Member of Board of Governors

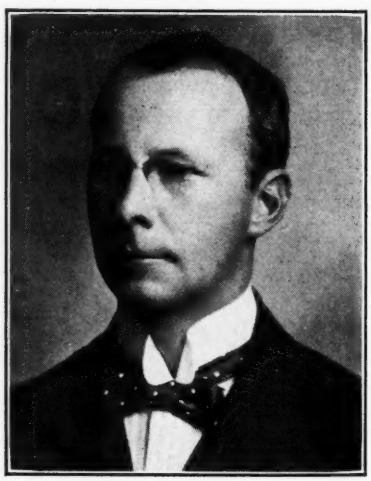
PAUL G. SPENCER
Waco, Texas
Member of Board of Governors
Member of Golf Committee



MARTIN DEWEY
New York, N. Y.
Member of Board of Governors
Member of International Committee on Orthodontic Nomenclature
Chairman, Publicity Committee



T. W. SORRELS
Oklahoma City, Okla.
Member of Board of Governors



A. C. LOCKETT
London, England
Member of Board of Governors
Member of Transportation Committee

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T. W. Sorrels, Oklahoma City, Okla. *(A.S.I.S.O.)*
Martin Dewey, New York, N. Y. *(A.S.D.S.O.)*
A. C. Lockett, London, England. *(E.O.S.O.)*
Harold Chapman, London, England. *(B.S.S.)*
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Henry A. Baker, Boston, Massachusetts.
William J. Brady, Kansas City, Mo.
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G. G. Campion, Manchester, England
Leon Frey, Paris, France
Milo Hellman, New York, N. Y.
Clinton C. Howard, Atlanta, Ga.
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Victor Hugo Jackson, New York, N. Y.
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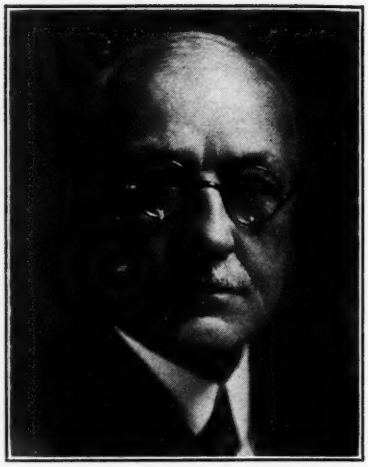
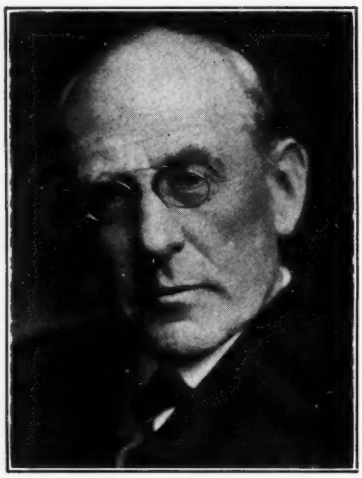
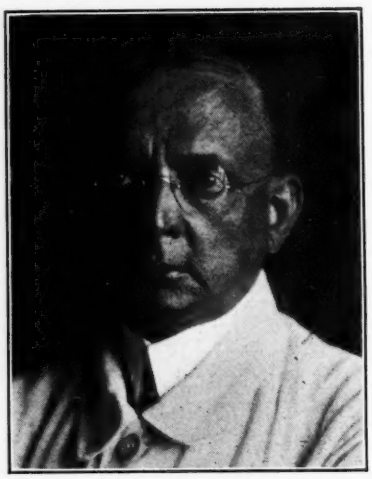
PAUL W. SIMON
Berlin, Germany
Member of Board of Governors



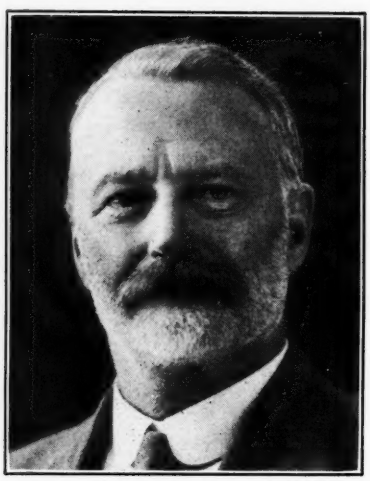
GEORGE C. AINSWORTH
Boston, Mass.
Honorary President



J. H. BADCOCK
London, England
Honorary President



CHRISTIAN BRUHN
Dusseldorf, Germany
Honorary President



G. G. CAMPION
Manchester, England
Honorary President

Harry E. Kelsey, Baltimore, Md. *(S.S.O.)*
Wilhelm Pfaff, Leipzig, Germany. *(D.G.Z.O.)*
Hugh G. Tanzey, Kansas City, Mo. *(A.S.I.S.O.)*
G. Izard, Paris, France. *(S.F.O.D.F.)*

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C. F. Bodecker.
Angelo Chiavaro.
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J. A. Detlefsen.
William K. Gregory.
Clarence J. Grieve.
Percy R. Howe.
Albert Kadner.
Alfred Kantorowicz.
Axel Lundstrom.
G. F. Cale-Matthews.
R. Ottolengui.
Rudolf Schwarz.
Luis Subirana.

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H. C. Pollock, St. Louis, Mo.
William E. Flesher, Oklahoma City, Okla.
Jos. D. Eby, *Secretary,* New York, N. Y.

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Luis Subirana, Madrid, Spain.
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Milo Hellman, New York, N. Y.
Abram Hoffman, Buffalo, N. Y.
Martin Dewey, New York, N. Y.

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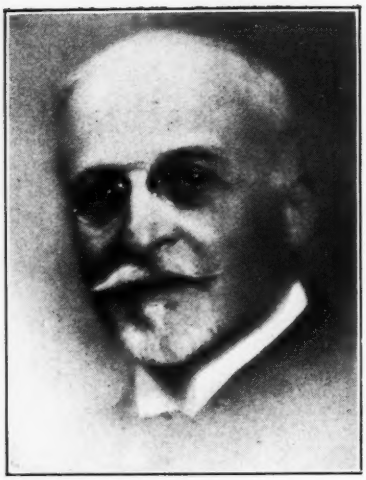
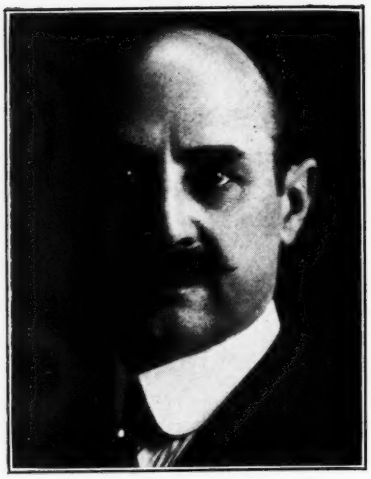
Oscar Carrabine, New York, N. Y.
Lowrie J. Porter, New York, N. Y.
C. Sterling Conover, New York, N. Y.
Walter C. Chapin, New York, N. Y.
Augustus C. Holt, New York, N. Y.

Committee on Registration

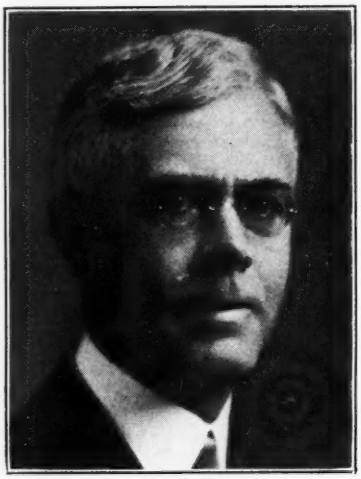
George B. Palmer, *Chairman,* 475 Fifth Ave., New York, N. Y.



LEON FREY
Paris, France
Honorary President



MILO HELLMAN
New York, N. Y.
Honorary President
Member of International Committee on Orthodontic Nomenclature



GUY G. HUME
Toronto, Canada
Honorary President
Member of Reception and Banquet Committee

CLINTON C. HOWARD
Atlanta, Ga.
Honorary President
Member of Reception and Banquet Committee

VICTOR HUGO JACKSON
New York, N. Y.
Honorary President

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L. M. Waugh, *Chairman,* 576 Fifth Ave., New York, N. Y.
Benj. E. Lischer, St. Louis, Mo.
Guy G. Hume, Toronto, Canada.
J. Lowe Young, New York, N. Y.
George B. Crozat, New Orleans, La.
Frank Nicolai, Brooklyn, N. Y.
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Ashley E. Howe, New Rochelle, N. Y.
Harry A. Allshouse, Kansas City, Mo.
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Elizabeth E. Richardson, San Francisco, Calif.
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Eda Schlencker, Rochester, N. Y.

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Martin Dewey, *Chairman,* 17 Park Ave., New York, N. Y.
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Harle L. Parks, Atlanta, Ga. *(South.)*
B. Frank Gray, San Francisco, Calif. *(Pacific Coast.)*
Chas. R. Baker, Evanston, Ill. *(Central West.)*
T. G. Duckworth, San Antonio, Tex. *(Southwest.)*
A. C. Lockett, London, England. *(Europe.)*

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Paul G. Spencer, Waco, Texas.
Frank M. Casto, Cleveland, Ohio.
Harry A. Hosmer, Detroit, Mich.
William A. Hillis, Greenwich, Conn.

Information

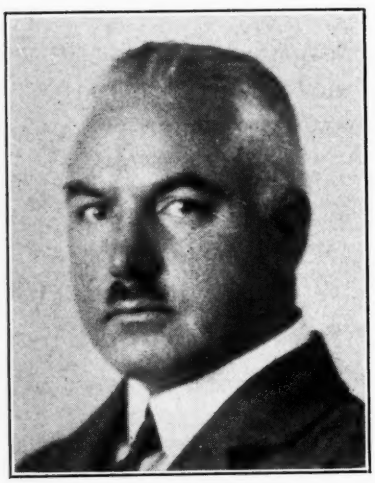
Registration.—The registration booth will be opened Monday morning, August 16, at nine o'clock and remain open the entire day. The hours for registration during the other days of the Congress will be announced in the program. Be sure to bring your membership card, in order to facilitate registration.

Hotel Reservations.—While it is believed the Hotel Commodore (together with the Hotel Biltmore, which is under the same management and is reached by an underground passage through the Grand Central Station) will have

A. H. KETCHAM
Denver, Colo.
Honorary President

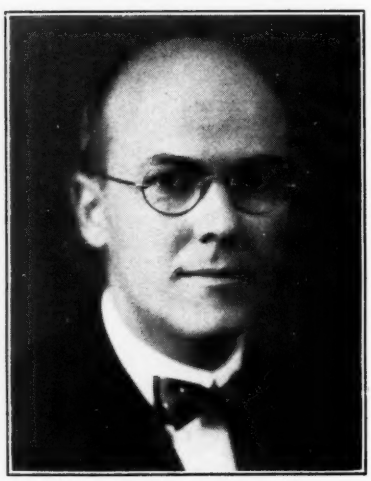
ALFRED KORBITZ
Partenkirchen, Bavaria
Honorary President

A. LEROY JOHNSON
Philadelphia, Pa
Honorary President



G. LIND
Amsterdam, Holland
Honorary President

B. E. LISCHER
St. Louis, Mo.
Honorary President
Member of Reception and Banquet Committee



JAMES D. MCCOY
Los Angeles, Calif.
Honorary President

ample accommodations for those attending the Congress, New York is always a crowded city and your committee on Arrangements advises that you make your reservations with the Hotel Commodore as early as possible.

Transportation.—The Transportation Committee advises that the members attending the First International Orthodontic Congress buy tickets via Philadelphia, as the summer Sesqui-Centennial rate is much better than the rate which would usually be granted by the Trunk Line Association to conventions.

Automobiles.—Ample garage space is provided by the hotel in its privately owned garage a few blocks distant.

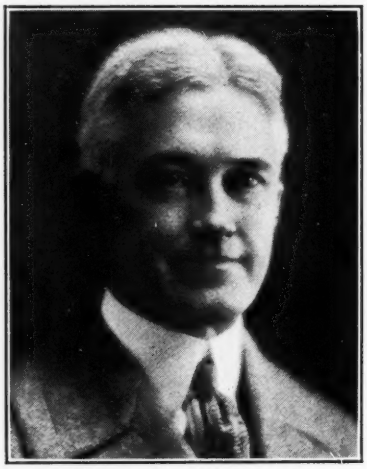
HOTEL COMMODORE
New York City
Headquarters of The First International Orthodontic Congress

Reception Committee.—The Reception Committee is planning to meet foreign guests at the piers. It is hoped that the Chairman, L. M. Waugh, 576 Fifth Ave., New York, will be notified in advance of the name of ship and time of arrival. The members of the committee, in addition to English, speak French, Italian, German and Spanish. Members bringing material for clinics or exhibits must notify the committee in advance, as arrangements have been made by which delay in clearing customs will be avoided. *Notification is most important.*

Banquet.—On Wednesday evening the foreign members will be the guests of their American Confrères at an elaborate banquet, which will be held at

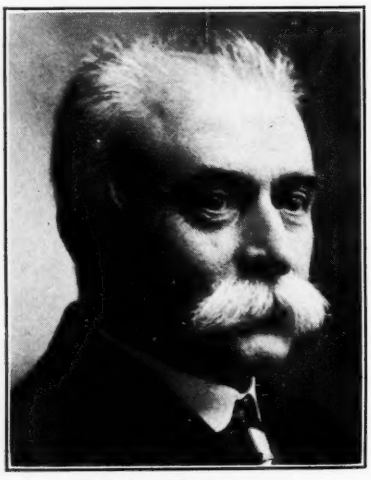
GEORGE NORTHCROFT
London, England
Honorary President
Chairman, International Committee on Orthodontic Nomenclature

ALBERIC PONT
Lyon, France
Honorary President



HERBERT A. PULLEN
Buffalo, N. Y.
Honorary President

JAMES THOMPSON QUINTERO
Lyon, France
Honorary President
Member of Board of Governors
Member of International Committee on Orthodontic Nomenclature



OSWALD RUBBRECHT
Ghent, Belgium
Honorary President

the Hotel Commodore. Further particulars of this will be found in the official program, which will be obtained at the time of registration.

Golf.—The afternoon of Thursday, August 19, will be the occasion of a golf tournament at the Westchester Biltmore Country Club, where the West Course has been reserved for the exclusive use of this tournament.

The tournament will be an eighteen-hole medal play handicap. There will be six prizes: first, for the low net eighteen-hole medal play handicap; two second prizes, one for the foreigner with the second lowest score and one for the American with the second lowest score. There will also be a first prize for the low gross score eighteen-hole medal play and two second prizes, one for our foreign guests and one for the Americans.

Arrangements for ample transportation facilities have been made by the Golf Committee. The Westchester Biltmore is, without a doubt, one of the most magnificent country clubs in America, and the golf courses themselves are rated among the finest.

Ladies Entertainment.—A special committee has been appointed to provide ample entertainment for those ladies who will accompany the members of the Congress.

On the afternoon when the men will indulge in their golf tournament this committee has arranged for a day's outing at the Orienta Beach Club on the shore of Long Island Sound. Comfortable busses will convey the visitors from the hotel, through the city parks and drives, to this Club, where they will have an opportunity of indulging in tennis and bathing.

This committee has also made ample provision to provide for shopping guides and sight-seeing for the ladies during the scientific sessions.

Membership

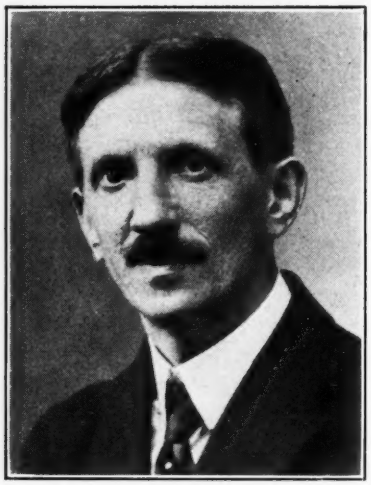
Membership in the Congress shall be in three classes:

A. Regular Membership.—This membership can be had only through membership in component societies. It carries the right to vote and hold office. A payment of ten dollars ($10.00) by a recognized orthodontic society and the endorsement of the plan of the Congress makes that society a component part of the congress and its members regular members of the Congress and entitles the society to a bound copy of the proceedings.

A regular member desiring a bound copy of the proceedings must pay ten dollars ($10.00), as does a subscribing member.

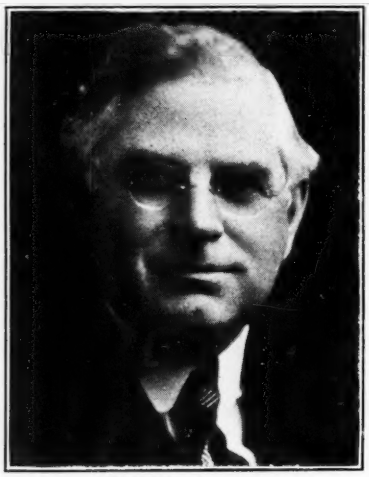
B. Subscribing Membership.—This membership is open to all ethical members of the dental and medical professions, irrespective of their membership in the component societies. The dues for this membership shall be ten dollars ($10.00) and shall entitle the member to all the privileges of the scientific session and to a bound copy of the proceedings. He shall have no right to vote or hold office unless he is a regular member.

C. Honorary Membership.—The Board of Governors may elect honorary members of the Congress.

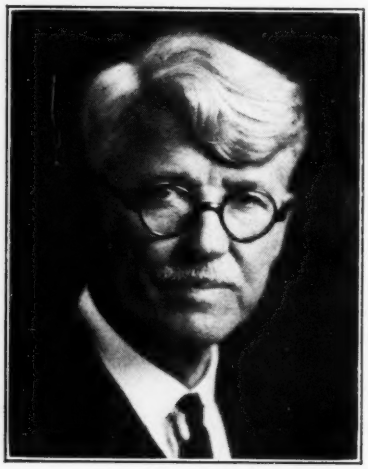


GEORGES L. VILLAIN
Paris, France
Honorary President

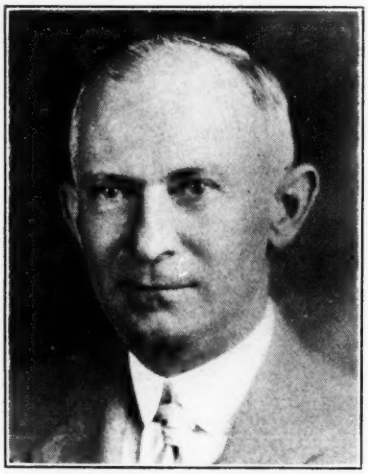
MILTON T. WATSON
Detroit, Mich.
Honorary President



J. LOWE YOUNG
New York, N. Y.
Honorary President
Member of Reception and Banquet Committee



BURT ABELL
Toledo, Ohio
Honorary Vice-President



OSCAR E. BUSBY
Dallas, Texas
Honorary Vice-President

Scientific Sessions

Rules and regulations covering the presentation of papers, clinics and case reports:

A. All papers, case reports, clinics and communications of any character whatever shall be the property of the First International Orthodontic Congress and the publication of the same, either in whole or in part, shall be determined by the Board of Governors upon the advice of the Program Committee.

B. English, French, Spanish, Italian and German shall be the official languages of the Congress, but papers (case reports and clinics) in any language other than English must be in the hands of the Program Committee not later than the first of June, 1926, in order that a translation and synopsis may be made.

C. All other papers, descriptions of clinics, and case reports must be in the hands of the Program Committee not later than the first of July, 1926. All papers must be typewritten, ready for printing, and be accompanied by illustrations.

D. A maximum of thirty minutes will be allowed for the reading of a paper; ten minutes for the speaker selected to open the discussion (which discussion must be in writing); and five minutes for any member continuing the discussion. The essayist will be allowed five minutes to close the discussion.

E. Any paper that cannot be read in thirty minutes must have a synopsis of the essential points accompanying it and twenty minutes will be allowed for the reading of this synopsis. The same rules in discussing the synopsis will apply as in discussing a paper.

F. Under no condition will a member who has spoken upon a subject be again allowed the privilege of the floor for discussing the same subject unless it be to answer an important question, the reply to which must not take over one minute.

G. The Board of Governors will endeavor as nearly as possible to give an opportunity to discussors to edit their own discussion. Wherever this is not possible the Board will assume the responsibility of editing the same.

H. Before speaking, members must call their name to the Presiding Officer or present it in writing to the Secretary. This is imperative, no matter how well the speaker may be known.

NOTE.—These rules regulating the time allowances in the scientific sessions WILL BE ENFORCED without favor at all times by the Presiding Officer.

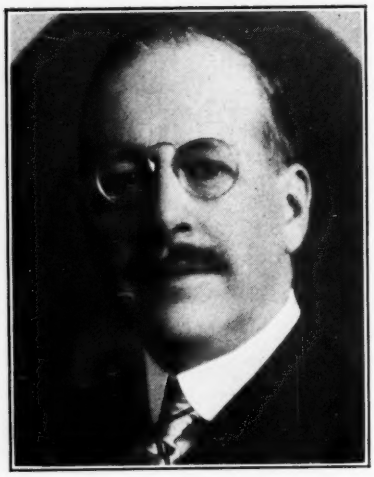
Program

(All sessions will be conducted on daylight saving time.)

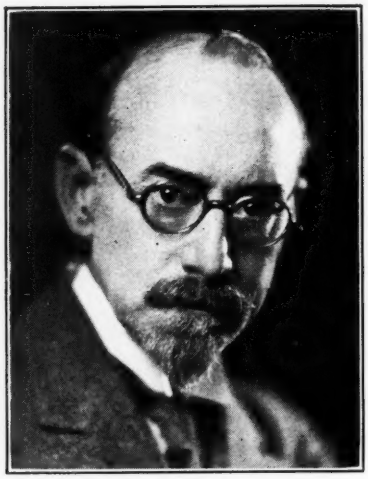
MONDAY, AUGUST 16, 1926

9:00 A.M.—Registration.

10:00 A.M.—American Society of Orthodontists Business Session.



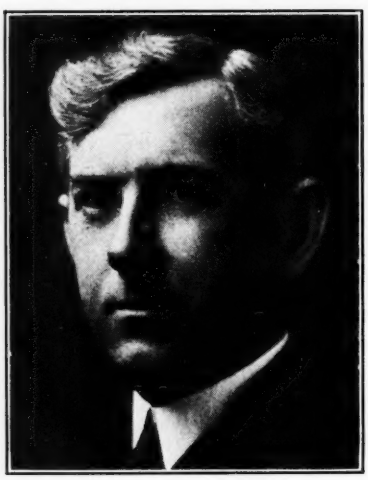
ALBERT W. CROSBY
New Haven, Conn.
Honorary Vice-President



HENRY C. FERRIS
New York, N. Y.
Honorary Vice-President

HENRY HOFFMAN
Denver, Colo.
Honorary Vice-President

G. IZARD
Paris, France
Honorary Vice-President



HARRY E. KELSEY
Baltimore, Md.
Honorary Vice-President

11:00 A.M.—Business Sessions of other Component Societies.

NOTE.—*Selective Study Clinic Classes:* It will be impossible for any member to attend more than three of the Selective Study Clinic Classes. Upon registration you will kindly indicate, upon the official blank provided, your choices of first, second, third and fourth from which the Committee will be able to allot three for you to attend. Tickets for these classes will be issued in ample time prior to Friday morning.

MONDAY, AUGUST 16, 1926

(All sessions will be conducted on daylight saving time.)

2:00 P.M.—Address of Welcome. *Augustus S. Downing, Commissioner of Professional Education.*

Response: *Leuman M. Waugh,* New York, N. Y.

President's address: *William C. Fisher,* New York, N. Y.

Report of Nomenclature Committee: *George Northcroft,* Chairman.

Papers.

Paleontology of the Human Dentition.
By *William K. Gregory,* New York, N. Y., and *Milo Hellman,* New York, N. Y.
(To be read by Professor Gregory.)

Influence of Feeding upon Malocclusion.
By *Percy R. Howe,* Boston, Mass.
(Discussion opened by Henry F. Hoffman, Denver, Colo.)

The Self-Correction of Orthodontic Anomalies.
By *Prof. Kantorowicz,* Bonn, Germany.
(Discussion opened by Alfred P. Rogers, Boston, Mass.)

Correlation Between Orthodontology, Dental Prophylaxis and Hygiene.
By *Angelo Chiavaro,* Rome, Italy.
(Discussion opened by A. Hoffman, Buffalo, N. Y.)

Business Session.

Report of Officers and Committees.

Announcements.

Adjournment.

TUESDAY, AUGUST 17, 1926

(All sessions will be conducted on daylight saving time.)

9:00 A.M.—**Papers.**

Some Case Reports and Their Bearing upon Diagnosis.
By *Axel Lundstrom,* Stockholm, Sweden.
(Discussion opened by Henry C. Ferris, New York, N. Y.)

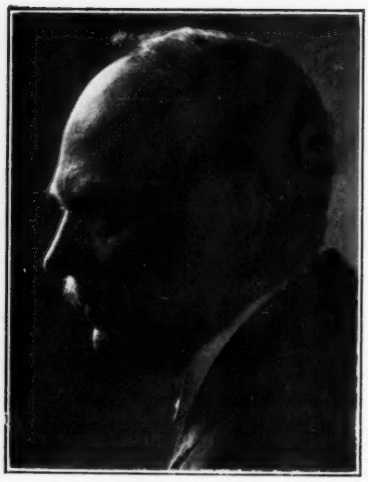
Changes in the Human Face Brought About by Development.
By *Milo Hellman,* New York, N. Y.
(Discussion opened by George Northcroft, London, England.)

The Complete Temporary Dentition at the Eruption of the First Permanent Molars. Its Importance in Diagnosis and Classification.
By *G. F. Cale-Matthews,* Birmingham, England.
(Discussion opened by Frank A. Delabarre, Boston, Mass.)

Occlusion—Observations upon Its Development from Infancy to Old Age.
By *Sheldon Friel,* Dublin, Ireland.
(Discussion opened by A. LeRoy Johnson, Philadelphia, Pa.)

Finality of Treated Cases with Special Reference to European Conditions.
By *A. C. Lockett,* London, England.
(Discussion opened by E. D. Barrows, London, England.)

Adjournment.



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Honorary Vice-President

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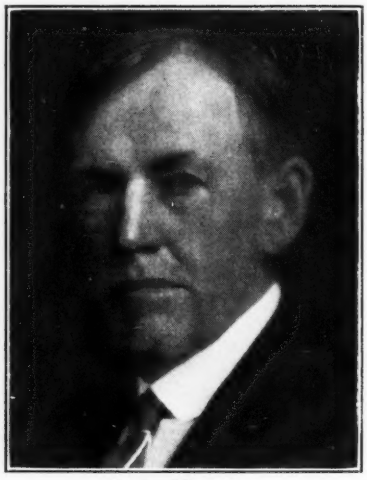

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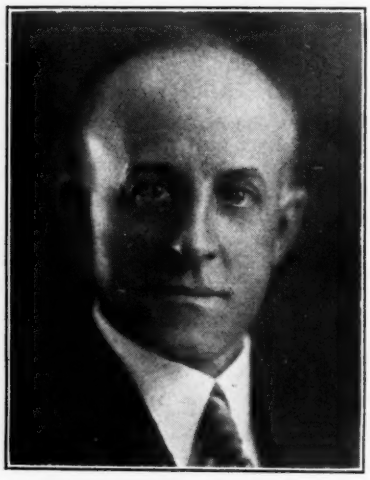

WILLIAM E. FLESHER
Oklahoma City, Okla.
Member of Program Committee

JOS. D. EBY
New York, N. Y.
Secretary, Program Committee
Member, Board of Governors
Chairman, Golf Committee

TUESDAY, AUGUST 17, 1926

(All sessions will be conducted on daylight saving time.)

2:00 P.M.—**Papers.**

The Evolution, Construction and Manipulation of the Pin and Tube Appliance.
By *J. Lowe Young,* New York, N. Y.
(Discussion opened by Geo. W. Grieves, Toronto, Canada.)

Orthodontics: Further Investigations in Etiology.
By *Harold Chapman,* London, England.
(Discussion opened by Hugh K. Hatfield, Boston, Mass.)

The Importance of Occlusion and Articulation in Dental Orthopedia.
By *Georges Villain,* Paris, France.
(Discussion opened by Leuman M. Waugh, New York, N. Y.)

Habits in Their Relation to Malocclusion and Facial Deformity.
By *H. A. Pullen,* Buffalo, N. Y.
(Discussion opened by Frank M. Casto, Cleveland, Ohio.)

Orthodontic Principles in Maxillo-Facial Restoration.
By *Oswald Rubbrecht,* Ghent, Belgium.
(Discussion opened by Jos. D. Eby, New York, N. Y.)

Adjournment.

WEDNESDAY, AUGUST 18, 1926

(All sessions will be conducted on daylight saving time.)

9:00 A.M.—**Papers.**

Tissue Changes Incident to Tooth Movement.
By *A. LeRoy Johnson,* Philadelphia, Pa. Collaborators: *J. L. Appleton,* Philadelphia, Pa., and *L. S. Rittershofer,* Philadelphia, Pa.
(Discussion opened by C. F. Bodecker, New York, N. Y.)

Developmental Limitations Imposed by Hereditary Factors.
By *J. A. Detlefsen,* Philadelphia, Pa.
(Discussion opened by A. LeRoy Johnson, Philadelphia, Pa.)

Orthodontia in Its Relation to Growth and Repair.
By *R. C. Derivaux,* Nashville, Tenn.
(Discussion opened by Martin Dewey, New York, N. Y.)

The Lingual Arch.
By *John V. Mershon,* Philadelphia, Pa.
(Discussion opened by Walter H. Ellis, Buffalo, N. Y.)

Adjournment.

WEDNESDAY, AUGUST 18, 1926

(All sessions will be conducted on daylight saving time.)

2:00 P.M.—**Papers.**

Cephalometric Methods and Orthodontia.
By *Rudolf Schwarz,* Basel, Switzerland.
(Discussion opened by Allen H. Suggett, San Francisco, Calif.)

A. Use of the Goniomandibular Angle in Orthodontia; Its Measurement on the Living Man: Its Practical Importance and Result.

B. New Predetermination of Normal Dental Arches Grounded by Constructing an Individual Curve, According to Some Facial Diameters.
By *G. Izard,* Paris, France.
(Discussion opened by Ralph Waldron, Newark, N. J.

The Necessity of a Gnathostatic Diagnosis in Practical Orthodontia.
By *Paul Simon,* Berlin, Germany.
(Discussion opened by Benj. E. Lischer, St. Louis, Mo.)

OREN A. OLIVER
Nashville, Tenn.
Member Program Committee

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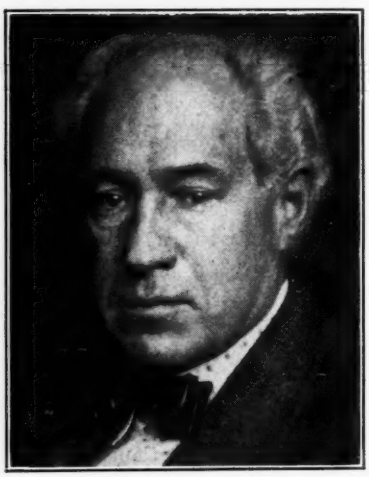

OSCAR CARRABINE
New York, N. Y.
Chairman, Ladies' Entertainment Committee

JOHN W. ROSS
Philadelphia, Pa.
Chairman, Transportation Committee

The Necessity of an Individual Therapy Instead of Schematizing Methods.
By *Albert Kadner,* Hamburg, Germany.
(Discussion opened by Harry E. Kelsey, Baltimore, Md.)

7:00 P.M.—**Testimonial banquet** to our Foreign Guests.

THURSDAY, AUGUST 19, 1926

(All sessions will be conducted on daylight saving time.)

9:00 A.M.—**Clinics.**

The Uses of Coil Springs in Orthodontia.
By *Edmund B. Arnold,* Houston, Texas.

Auxiliary Springs, Their Construction and Application on Practical Cases as Used with Lingual and Labial Appliances.
By *P. R. Ashplant,* Newburgh, N. Y.

Cast Hawley Retainer with Attachments Showing Advantages Over the Vulcanite Retainer.
By *Ernest N. Bach,* Toledo, Ohio.

Taking Impressions of Molars to be Banded.
By *Charles R. Baker,* Evanston, Ill.

A Square Pin and Tube Having a Positive Locking Device for Use on Anterior and Premolar Teeth.
By *Sydney W. Bradley,* Ottawa, Canada.

A Comparative Study.
By *O. W. Brandhorst,* St. Louis, Mo.

Buccal and Labial Extensions from the Lingual Arch.
By *George C. Brown,* Worcester, Mass.

A Method of Preventing Occlusal Cavities.
By *Archie B. Brusse,* Denver, Colo.

Coil Auxiliary Springs.
By *Oscar E. Busby,* Dallas, Texas.

Showing Appliance Used in Treatment of Case of Extreme Mesioclusion.
By Winston P. Caine, Chattanooga, Tenn.

1. Models Showing Progress with an Endocrine Case.
2. Models Showing Progressive Correction of a Habit Case without the Aid of Appliances.
3. Models Showing Progress of a Mutilated Case. Treatment Begun at the Age of Twenty-eight Years.

By *Major Harry Deiber,* Dental Corps, U. S. Army, *Major Lowell B. Wright,* Dental Corps, U. S. Army, and *Major Leigh C. Fairbank,* Dental Corps, U. S. Army.

A Group of the More Commonly Used Lingual and Labial Appliances.
By *Bernard G. DeVries,* Minneapolis, Minn.

Evolution of the Lingual Lock.
By *Martin Dewey,* New York City.

1. Treatment of Mesioclusion Cases.
2. Inlocked Upper Incisors of Neutroclusion.

By *T. G. Duckworth,* San Antonio, Texas.

Results Obtained in Treatment of Mesioclusion Cases.
By *Max E. Ernst,* St. Paul, Minn.

Showing Different Types of Auxiliary Springs Used with Pin Appliance.
By *G. Vernon Fisk,* Toronto, Canada.

High Labial Arch Technic and Some Results.
By *James W. Ford,* Chicago, Ill.

Demonstrating Uses of Spring Pressure, in Different Types of Tooth Movement, for Tissue Stimulation.
By *A. C. Gifford,* Oshkosh, Wis.

The Fundamental Principles of the Jackson Appliance.
By *William H. Gilpatrick*, Boston, Mass.

Buccal Inclined Planes in Conjunction with Pin Appliance, for Stimulation of Growth of the Mandible.
By *George W. Grieve*, Toronto, Canada.

The Application of Light Resilient Arches in Conjunction with a Special Lock.
By *E. M. Griffin*, Portland, Oregon.

Types of Malocclusion of Deciduous Teeth and Results of Orthodontic Treatment.
By *Leonard M. Gunton*, New York City.

The Carrying of Artificial Teeth Attached to an Orthodontia Appliance While Moving Teeth.
By *J. A. Cameron Hoggan*, Richmond, Va.

A Class II Case Showing Photographs and Models Before and After Treatment.
By *William A. Hillis*, Greenwich, Conn.

1. After-Results of Cases Treated about Twenty-five Years Ago.
2. Lingual Arch Appliances.
By *Horace L. Howe*, Boston, Mass.

Models Before and After Treatment, with the Appliances That Were Used in Each Case.
By *Herbert C. Hopkins*, Washington, D. C.

Indirect Method of Band Construction.
By *Harry L. Hosmer*, Detroit, Mich.

Photographic Series of Dissected Skulls, Showing Development and Eruption of Teeth. Models of Natural Teeth.
By *W. G. Hughes*, Walla Walla, Wash.

Irish Pressure Meter for Measuring Strength in Completed Appliance.
By *Russell Irish*, Pittsburgh, Pa.

Fixed Bite Plane.
By *John M. Jones*, Wichita, Kansas.

Reinforced Bands and Occlusal Rests.
By *Jesse F. Keeney*, Quincy, Ill.

Life-Sized Photograph Showing Influence of External Pressure-Habits in Causing Deformities of the Jaws and Malocclusion of the Teeth.
By *A. H. Ketcham*, Denver, Colo.

Orthodontic Device for More Positive Application of Intermaxillary Force without the Use of Elastics.
By *Norris C. Leonard*, Baltimore, Md.

Irregularities of Tooth Form.
By *F. A. Leslie*, Stockton, Cal.

Differential Diagnosis.
By *B. E. Lischer*, St. Louis, Mo.

Molar Band Construction Technic.
By *O. H. McCarty*, Tulsa, Okla.

Orthodontic Eruption of Impacted Teeth.
By *John A. McPhail*, Cincinnati, Ohio.

A Simple Adjustable Band—Mainly for Lingual Appliances.
By *G. F. Cale-Matthews*, Birmingham, England.

Recording Actual Pressure Exerted by Auxiliary Springs in Conjunction with Lingual Arch.
By *H. C. Metz*, Pittsburgh, Pa.

Several Overbite Cases Treated with the Lingual and Plain Labial Arches.
By *Norborne F. Muir*, Roanoke, Va.

Diagnostic X-ray Pictures and a Method of Mounting.
By *William A. Murray*, Evanston, Ill.

Models Showing Treated Cases of Abnormally Attached Frenum Labium with Surgical Interference.
By *B. W. Patton*, Birmingham, Ala.

An Analysis of Early and Delayed Treatment of Class III Cases.
By *F. F. Perry,* Montgomery, Ala.

Orthodontic Model Former. Models Completed in Twenty Minutes. All Carving Eliminated.
By *Lowrie J. Porter,* New York City.

Treatment of the Deep Underbite with the Inclined Plane.
By *Herbert A. Pullen,* Buffalo, N. Y.

Simple Treatment of Labioversion of the Maxillary Anterior Teeth.
By *Elizabeth E. Richardson,* San Francisco, Cal.

Treatment of Fractured Jaws by Orthodontic Methods.
By *Oswald Rubbrecht,* Ghent, Belgium.

Demonstration of Gnathostatic and Photographic Apparatus.
By *Paul Simon,* Berlin, Germany.

A Device Devoted to Orthodontic Teachings Outlining All the Movements of the Teeth Both Individually and Collectively.
By *Luis Subirana,* Madrid, Spain.

Facial Casts—Technic—New Process.
By *T. W. Sorrells,* Oklahoma City, Okla.

1. Method of Readapting a Lingual Arch in the Mouth.
2. A Suggestion for Tortional Bend in a Lingual Arch.

By *Louis S. Winston,* Houston, Texas.

12:30 P.M. *(sharp).*—Leave for **Golf Tournament** at Westchester Biltmore Country Club.

FRIDAY, AUGUST 20, 1926

(All sessions will be conducted on daylight saving time.)

9:00 A.M.—**Educational Selective Study Clinic Classes.**

1. Plaster and Modeling Compound Technic, Including Impressions and Models.
   By *James C. Allan,* New York, N. Y., *P. R. Ashplant,* Newburgh, N. Y., *Ashley E. Howes,* New Rochelle, N. Y., *James D. McCoy,* Los Angeles, Cal., and *R. B. Van Gieson,* Newark, N. J.
2. Band Technic.
   Direct Band Construction.
   By *Jos. D. Eby,* New York, N. Y.
   Indirect Band Construction.
   By *Leuman M. Waugh,* New York, N. Y.
3. Technic of Construction of Lingual and Labial Appliance.
   By *Oren A. Oliver,* Nashville, Tenn.
4. Radiographic Technic.
   By *Clarence O. Simpson,* St. Louis, Mo.
5. Photographic Technic.
   By *B. E. Lischer,* St. Louis, Mo.
6. Engineering.
   By *Fred L. Stanton,* New York, N. Y.

FRIDAY, AUGUST 20, 1926

(All sessions will be conducted on daylight saving time.)

2:00 P.M.—**Papers.**

A Study of Pathologic Root Absorption.
By *A. H. Ketcham,* Denver, Colo.
(Discussion opened by R. Ottolengui, New York, N. Y.)

The Place of Extraction in Orthodontic Treatment.
By *J. H. Badcock,* London, England.
(Discussion opened by Albert W. Crosby, New Haven, Conn.)

At What Age Must the Corrections Begin?
By *Luis Subriana,* Madrid, Spain.
(Discussion opened by B. Frank Gray, San Francisco, Calif.)

Essential Technic in the Use of the Open Tube Appliance.
By *James D. McCoy,* Los Angeles, Calif.
(Discussion opened by Harvey A. Stryker, Los Angeles, Calif.)

The Technic of Soldering Auxiliary Springs to Lingual Arches.
By *James T. Quintero*, Lyon, France.
(Discussion opened by Oren A. Oliver, Nashville, Tenn.)
Final Business Session.
Adjournment of the First International Orthodontic Congress.

Case Reports—Exhibits

Disto Version Case for Boy Seventeen Years Old, Who Has a Very Promising Voice, Wherein Correcting the Malocclusion Greatly Improved His Voice, as Well as Other Benefits Derived Therefrom. By *Harry Allshouse, Jr.*, Kansas City, Mo.

Treatment of a Class I Case. By *Frank M. Casto*, Cleveland, Ohio.

Two Brothers under Treatment. A Service Which May Be Rendered by the Science of Orthodontia to Conditions of Malocclusion Accompanying Congenital Cleft-palate. By *Walter C. Chapin*, New York City.

Congenitally Missing Lower Central with Malerupting Cuspids. By *William T. Chapman*, El Paso, Texas.

Unilateral Posteroclusion with the Labioversion of the Maxillary Anterior Teeth. By *Martin Dewey*, New York, N. Y.

1. Mutilated Cases of Class III.
2. Illustrating a Case Where the Canine Erupted against Central, and Lateral against First Premolar. By *Adelbert Fernald*, Boston, Mass.

The Correction of Unilateral Linguoversion of the Maxillary Teeth by Use of the Removable Lingual Appliance and Auxiliary Springs. By *W. E. Flesher*, Oklahoma City, Okla.

Showing Excessive Overbite Complicated by Distoclusion and the Removal of Both Upper First Molars and Lower Right First Molar. By *A. D. Gifford*, Oshkosh, Wis.

Report of Cases Showing Correction of Deficient Vertical Development in Molar and Premolar Region. By *B. Frank Gray*, San Francisco, Cal.

Relieving Impacted Bicuspids. By *Frank H. Harrison*, Waco, Texas.

Orthodontic Treatment and Result of a Case of Malocclusion of the Teeth Brought by Conditions Associated with Congenital Cleft-palate and Harelip. *By Milo Hellman*, New York, N. Y.

Orthodontic Treatment Following Operation for Unilateral Ankylosis of the Temporomandibular Articulation. By *A. H. Ketcham*, Denver, Colo., and *William R. Humphrey*, Denver, Colo.

Report of a Case Complicated by an Impacted Maxillary Cuspid and Early Mutilation. By *L. M. James, Jr.*, Kansas City, Mo.

Mesioclusion Case. Type of Appliances Used and Result at the End of Fourteen Months. Case not Completed. By *Jesse F. Keeney*, Quincy, Ill.

Report of Case Illustrating Use of Combination Lingual and Labial Appliance for Closing Spaces Left by Extraction of First Molars. By *Harry E. Kelsey*, Baltimore, Md.

Two Cases of Under-Developed Maxilla and Over-Developed Mandible. By *William A. McCarter*, Topeka, Kansas.

Methods of Treatment. By *Paul J. McKenna*, Springfield, Mass.

1. Case of Excessive Width of Mandible.
2. An Unusual Case of Distoclusion with Impaction of Second Premolars. By *G. F. Cale-Matthews*, Birmingham, England.

Importance of Orthodontia in Preliminary Treatment of Extreme Cases of Cleft-palate and Harelip (Lantern Slides). By *Joseph J. Millard*, New York, N. Y.

A. Detail Steps in the Construction of Mershon Type Lingual and Labial Appliances.
B. Cases Treated by Same Method. By *Oren A. Oliver*, Nashville, Tenn.

The Treatment and Retention of Mesioclusion Simplified. By *Alfred P. Rogers*, Boston, Mass.

Cephalometric Methods and Orthodontia. By *Rudolf Schwarz*, Basel, Switzerland.

Third Molars Response to Spring Pressure. By *Charles A. Spahn*, New York, N. Y.

Third Molar Interference. By *Paul G. Spencer*, Waco, Texas.

Treatment of Two Class III Adult Cases. By *D. S. Sterrett*, Erie, Pa.

Class II, Division 1, Patient Fourteen Years of Age. By *Harvey A. Stryker,* Los Angeles, Cal.

Two Cases Showing the Development that is Taking Place with the Use of Lingual Arch and Auxiliary Springs. By *Arthur B. Thompson,* Des Moines, Iowa.

Report of Three Cases—One Neutroclusion, One Distoclusion, One Mesioclusion. By *Ransford B. Van Gieson,* Newark, N. J.

Two Hereditary Cases of Supernumerary Teeth in Same Family. By *Raymond Webster,* Providence, R. I.

Surgicalorthodontic Correction of a Macromandibular Deformity. By *Raymond C. Willett,* Peoria, Ill.

Similarity of Cases in Same Family. By *Claude R. Wood,* Knoxville, Tenn.

1. Class III Angle Classification. Growth Interference Produced by Habit, and Assisted by Pathology.
2. Two Cases of Brothers Showing Unbalanced Growth of Tooth Structure with Great Variation in Effect upon Dental Arches. By *Oliver W. White,* Detroit, Mich.

A Class I Case with a Crowded Condition of the Anterior Teeth of Both Upper and Lower Arches. By *J. B. Odeneal,* Tampa, Florida.

Class I (Neutroclusion) Impacted Upper Canine with Forward Drift of Upper Right Molars and Premolars, Simulating a Class II Subdivision Case.

1. Maps (in three dimensions) of the malocclusion.
2. Axis of symmetry and centroid of denture.
3. Maps of proposed occlusion.
4. Composite maps of upper and lower, showing the malocclusion related to the occlusion to show the minimum tooth movement to change from malocclusion to occlusion.
5. Photographs of models at various stages.
6. Drawing of the appliances. By *F. L. Stanton,* New York, N. Y.

Special Scientific Exhibit from the American Museum of Natural History

The Palaeontology of the Human Dentition.

1. Structural Stages in the Evolution of the Dentition.
2. The Dryopithecus Pattern in the Lower Molars of Anthropoids and Man.

By *William K. Gregory,* New York, N. Y.

Photographic, Radiographic and Office Records Exhibit

An Orthodontic Exhibition from the Harvard University Dental School.

A. Methods of Teaching.

B. Results of Teaching.

Columbia University Dental School, Department of Orthodontia.

1. Clinical Instruction.
2. Technic Course.
3. Method of Producing Identical Casts for Laboratory Technic Work.

Photographs of Orthodontic Cases Before and After Treatment. By Dental Students of the College of Physicians and Surgeons, San Francisco, Cal., *Elizabeth E. Richardson,* Instructor.

Office Records. By *Ernest N. Bach,* Toledo, Ohio.

Method of Keeping Records of an Orthodontic Practice. By *C. R. Baker,* Evanston, Ill.

Anomalies Disclosed by the X-ray. By *Frank M. Casto,* Cleveland, Ohio.

Office Records. By *Wyatt B. Childs,* Macon, Ga.

Laboratory Work List. By *F. A. Delabarre,* Boston, Mass.

Radiographic Exhibit. By *T. G. Duckworth,* San Antonio, Texas.

Photographing Models to Scale in Combination with the Fundamental Concept of the Dental Arch. By *William H. Gilpatrick,* Boston, Mass.

The Removable Retainer. By *C. A. Hawley,* Washington, D. C.

Impression Trays and Materials Demonstrating a Method of Modeling Composition Impression Taking Adapted to the Needs of Orthodontists. By *James David McCoy,* Los Angeles, Cal.

A Simple System of Orthodontic Photography. By *Clinton C. Howard,* Atlanta, Ga.

A Logical Orthodontic Treatment Plan. By *Bernard L. Hyams,* Montreal, Canada.

General Office Routine. By *H. C. Pollock,* St. Louis, Mo.

Office Records. By *Lowrie J. Porter,* New York, N. Y.

Office Routine of the Patient. Cast Photography. By *T. M. Robertson,* Coffeyville, Kans.

1. Visual Reasons for Failures in Class II or Distal Occlusion Cases.
2. Photographic and Model Record of Class II Case Covering a Period of Ten Years.
3. Model and Photographic Record of Bilateral Canine Extraction. By *Charles A. Spahn,* New York City.

Office Records. By *D. S. Sterrett,* Erie, Pa.

Radiography.

A. Standard Routine Technic.

B. Technic for Differential Diagnosis.

C. Some Unexpected Conditions. By *L. M. Waugh,* New York, N. Y.

Simplified Records and Bookkeeping of an Orthodontist. By *C. W. B. Wheeler,* New York, N. Y.

Plans for an Orthodontist's Suite and Form for Business Administration. By *R. C. Willett,* Peoria, Ill.

Standard Routine Radiography. (*a*) Unique Observation. By *J. Lowe Young,* New York, N. Y.

Commercial Exhibitors

Julius Aderer
American Cabinet Company
Baker and Company
Buck X-Ograph Company
Clover Leaf Products
Columbia Dental and X-ray Corporation
Eastman Kodak Company
C. V. Mosby Company
J. M. Ney Company
Ritter Dental Corporation
Victor X-Ray Corporation
S. S. White Dental Mfg. Company
Wiate and Bartlett Mfg. Co.

Seventh International Dental Congress
Philadelphia, Pa., August 23-27, 1926

The assemblage of men and women of eminence in dental science and practice at the Seventh International Dental Congress, the papers they will read, and the results of their researches and inventive genius, which they will place before the Congress, will make it momentous.

The dental exposition which will be held will be of equal importance. The fifteen to twenty thousand dentists who will assemble will have visualized in this exposition the past, present and future advancement of dentistry and oral hygiene. The exhibit will be in the Commercial Museum buildings, in whose convention hall, one of the largest in the country, the sessions of the Congress will be held. The Historic and Scientific sections of the dental exhibition will be huge in size and exhaustive in comprehension of their subjects.

The Committee on Historic and Scientific Exhibits has the assembling of these displays well under way.

Noteworthy is the cooperation being extended by the United States and foreign governments in this respect.

The United States Government is cooperating by sending exhibits illustrating all phases of dental activity with which it is identified, such as those in the Army, the Navy and the United States Public Health Service.

The German government is cooperating with the dental profession of that country not only in a similar respect, but by taking charge of and defraying the cost of assembling, transporting, arranging and caring for the exhibits while here and their return to their owners. Two thousand square feet of space has been reserved for the German display.

The United States Government exhibits are being assembled and will be displayed through the generous assistance of the Surgeons-General of the Army, the Navy and the Public Health Service. The Government exhibits will bring out many features never stressed before, and these displays will be of great educational value.

The War Department will, for instance, include in its program a very complete exhibit of maxillofacial surgery, the result of the exceptional experience it has had, particularly through the participation of this country in the World War and the battle-front service of the Army Dental Surgeons.

There will be photographs, radiographs, casts and appliances used. They will show, in detail, the final results of actual cases of gunshot wounds received during war and peace times and the startling achievements that have been made in rehabilitation of wounded soldiers. The display of wax models will be very complete.

The work of the Army Dental School and the Army Dental Corps will be fully shown, including pictorial exhibits of buildings, clinics, laboratories, etc. There will be an exhibit of the research activities of this branch of the War Department.

An interesting display will show the scientific equipment for field service of an Army dental unit. The Navy will show a full-sized section of a battleship, containing a complete dental infirmary, and an oral hygiene dispensary for enlisted men on sea service. The Navy will also show the occupational training of enlisted men as dental assistants and oral hygienists as it is carried on in the Navy Dental School. Moving picture reels will supplement the Navy, as well as the Army exhibit.

The Surgeon-General of the United States Public Health Service has given Dr. C. F. Messemer, in charge of the Dental Division of the service, authority to assemble an illuminative display, which he is supervising in person.

An important display will be that of the Mayo Foundation, of Rochester, Minnesota, under the direction of Dr. Boyd Gardiner. In connection with this exhibit, Dr. E. C. Rosenow will show bacteriologic evidences, technic and pathologic lesions of the mouth.

The Deaner Institute, of Kansas City, will present, under the direction of Dr. Russell Haden, the well-known exhibit showing the results of the comprehensive study of periapical infections.

There has also been obtained through the cooperation of Mrs. Matthew H. Cryer, the famous collection of anatomic specimens of the late Dr. M. H. Cryer. Also, there will be brought from Europe a large exhibit loaned by Professor Dr. B. Gottlieb, of Vienna, consisting of photomicrographs illustrating the results of the recent work in his laboratory.

Dr. B. W. Weinberger will exhibit a series of transparencies illustrating the development of the dental chair and the extracting instrument, from the days of the old-style "pelicans" down to the most modern forceps. A picture of a pair of forceps brought over in the "Mayflower" is in his collection. He also has in his collection photostat copies of the title pages of early publications in dental literature, dating back as far as 1530.

Dr. Vilray P. Blair, of St. Louis, will contribute an exhibit showing operations for harelip. He will show a series of casts and photographs of operations for massive restoration of the face.

The progress of dental education will be prominently displayed, and in this the institutions of dental learning and training in this country and abroad will participate. Several American dental schools will give physical displays of students under training.

The Committee is developing to a high degree the Historical Exhibit and already has made such progress as to insure a display of unusual merit. Favorable response has been received from the custodians of priceless collections of dental relics. Among those which it hopes to obtain is that of Dr. Vincenzo Guerini, of Naples, which includes dental instruments and other objects dating back to the Etruscan period.

American dentistry will have an important part in the historical exhibit. A feature will be a set of teeth made by John Greenwood for President George Washington, the set being mounted on a bone plate.

Professor William H. Gilmour, director of Dental Education at the University of Liverpool, will bring over his collection of ancient dentures, mounted on bone, together with a display of early instruments. Dr. Edward C. Kirk of Philadelphia, will also loan his collection of early dentures, instruments and dental rarities.

A unique feature will be the arrangement of a gallery of portraits and photographs of men who have stood out prominently in the development of dentistry in this country during the last century.

The Committee on Arrangements draws attention to the fact that members of the American Dental Association in good standing are, by virtue of their membership, members of the Congress and are entitled to all its privileges. Dental practitioners in this country not members of the A. D. A. are not eligible to admission to the Congress sessions. Student visitors to the Congress are eligible to admission upon certification from the dean of the school attended and the payment of five dollars each. Associate membership in the Congress is provided for members of the medical profession and other scientific professions upon payment of ten dollars each. Other visitors may be admitted upon payment of five dollars per person.